MFS / YORK / STORMOR

A Division of **GLOBAL** *Industries, Inc.*

Ezee Dry Bin Dryer

18'-30' Diameter Batch / Continuous Flow

CONSTRUCTION AND OWNER'S MANUAL

P/N 015885

rev 2013-12-02

The Symbol shown below is used to call your attention to instructions concerning your personal safety. Watch this symbol - it points out important safety precautions. It means **"ATTENTION"** - Become Alert! Your Personal Safety Is Involved! Read the message that follows and be alert to the possibility of personal injury or death.

BE ALERT! Your Personal Safety Is Involved

A copy of this manual should be available at all times to the owner/operator. Additional copies may be requested from the company at the address shown on the back cover. Please reference part number #015885 when requesting additional copies.

Please Contact MFS/YORK/STORMOR or Your Dealer If You Have Any Questions Concerning This Manual

Keep This Manual In A Safe Place Available For Future Reference

PREFACE

You have purchased the finest roof dryer and grain storage bin manufactured today. The following information is intended as a guide in caring for your bin prior to construction, proper construction of your bin, and safe and proper use of your bin once constructed.

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Warranty

Global Industries Inc. (the **Company**) makes the following warranty to the initial retail purchaser of its products (the **Customer**).

MATERIALS and WORKMANSHIP:

The Company warrants products manufactured by it to be free from defects in materials and workmanship in normal use and service for a period of five (5) years after date of delivery to the Customer.

COMPANY'S OBLIGATION and CUSTOMER'S EXCLUSIVE REMEDY:

The Company's sole obligation and the Customer's exclusive remedy under this warranty is as follows:

If within five (5) years after delivery to the customer the product fails to function properly due to a defect in either materials or workmanship, the Company will at its option, either repair the defective part or replace the defective part with a new or reconditioned part. Labor charges for removing defective parts and installing replacement parts, shipping charges with respect to such parts, and applicable sales and other taxes, if any, shall not be covered by this warranty.

CONDITIONS, LIMITATIONS, AND EXCLUSIONS:

There are no warranties or merchantability or fitness for a particular purpose with respect to any product manufactured or sold by the Company. Motors provided by the Company are in most instances warranted by the manufacturer thereof and are not warranted by the Company. The Company shall not be responsible under this warranty or otherwise for personal injury or for **Incidental or Consequential Damages,** including, without limitation, loss of use and lost profits. This warranty does not apply to defects or damages caused by misuse, improper maintenance, or improper installation of the Company's product or any equipment attached to or used in connection with the Company's product. The Company reserves the right to make changes or improvements to its products without incurring any obligation with respect to previously manufactured products. Field modification of this product without the expressed written permission of the Company constitutes a misuse of the product. The Company shall have no liability under this warranty until payment in full for the product in question has been made by the customer. The foregoing is the sole warranty made by the Company. No one is authorized to make other warranties on behalf of the Company.

Maintenance

Virtually the only thing that will limit the useful life of your bin is rust. MFS/YORK/STORMOR has specified a galvanized coating on the steel used to fabricate your bin that will give many years of service if properly maintained. However, some rusting over a period of years can be expected with any galvanized products exposed to the weather. We suggest the following:

1. Do not allow the galvanized surfaces of your bin to become cluttered with grain or foreign material. As these organic materials deteriorate, they produce acids that may cause immediate damage to the galvanized coating. Clean off any such buildups immediately.

2. Check the horizontal surfaces of your bin for any rain water ponding. Dry and correct the source of ponding immediately.

3. The useful life of bins installed in coastal or acid rain areas may be improved through periodic rinsing of the exterior surfaces with fresh water.

4. After unloading your bin, any organic material clinging to the interior walls or floor should be removed.

5. Any large areas of zinc oxidation, commonly called "**white rust"**, may eventually lead to deterioration of the base steel itself exhibited by the formation of normal "**red rust**". Small areas of white rust may be periodically repaired by steel brushing and touch up painting with a wash primer and enamel paint. Large areas of white rust or any red rusted areas should be repaired by sanding to base metal and painting with a quality zinc-rich paint.

Besides stopping the premature development of rust, other things you should periodically check are:

1. Any obvious foundation settlements. Major settlement may cause structural failure of your bin.

2. Deterioration or looseness of any bolts or fasteners.

3. Continued secure attachment of all sidewall and roof ladders.

4. Proper functioning and attachment of all bin openings such as sidewall doors, roof manholes, and roof caps. Be sure all latches and hold down clips are used as intended.

5. Since your bin is equipped with a floor, periodically remove the fan transition and check beneath the floor for the condition of the floor supports, pests, or a buildup of dust or FM. Clean or repair as required.

6. MFS/YORK/STORMOR **strongly** suggests that any mechanical, electrical or fuel burning auxiliary equipment installed in or on the bin be checked on a yearly basis by a **qualified service technician**. Consult your dealer for this service as they are well versed in the care and maintenance of this equipment.

Important Safety Information

This MFS/YORK/STORMOR Construction/Safety Manual is written to assist and instruct those who are responsible for the complete bin assembly.

MFS/YORK/STORMOR assumes no liability with respect to proper constructed and inspection, assembly, or use of its products established under applicable laws, all of which is the sole responsibility of the purchaser and those doing the assembly work.

Appurtenances and the accessories manufactured by us for use with our products conform only to applicable Federal or Safety Standards in effect at such time.

GENERAL SAFETY STATEMENT

Occupational safety is of prime concern to us at MFS/YORK/STORMOR. This manual was written with the safety of the operator and others who come in contact with the equipment as our prime concern. The manual presents day to day work problems encountered by the operator and other personnel. We wrote this manual to help you understand safe operating procedures for grain bins with accessory equipment. We want you as our partner in safety.

It is your responsibility as an owner or operator or supervisor, to know what specific requirements, precautions, and work hazards exist and to make these known to all other personnel working with the equipment or in the area, so that they too may take any necessary safety precautions that may be required.

Failure to read this Manual and its Safety Instructions by all personnel is a misuse of the equipment.

Watch For This Symbol. It Points Out Important Safety Precautions.
It Means "**ATTENTION**" - Become Alert! Your Safety Is Involved.

WORK AREA SAFETY STATEMENT

Under no circumstances should persons not involved in the operation be allowed to **trespass** into or be present in the work area.

It shall be the duty of all operators to see that children and/or other persons stay out of the work area! Trespass into the work area by anyone not involved in the actual operations, or trespass into a hazard area by anyone, shall result in an immediate shut down by the operator.

It shall be the responsibility of all operators to see that the work area has secure footing and is clean and free of all debris and tools which might cause accidental tripping and/or falling. It shall also be their responsibility to keep the work area clean and orderly during the operation.

OPERATOR QUALIFICATIONS

Operation of this unit shall be limited to competent and experienced persons. In order to be qualified, he must also know and meet all other requirements, such as, but not limited to, the following:

1. Some laws and regulations specify that no one under the age of 16 years may operate power machinery. It is your responsibility to know what these requirements are in your own area or situation.

2. Current OSHA regulations state in part: "At the time of initial assignment and at least annually thereafter, the employer shall instruct **every** employee in the safe operation and servicing of all equipment with which the employee is, or will be involved"*

3. Unqualified persons are to **stay out** of the work area.

4. A person who has not read and understood all operating and safety instructions is not qualified to operate the machine.

* Federal Occupational Safety & Health Standards for Agriculture Subpart D. Section 9128.57 (a) (6).

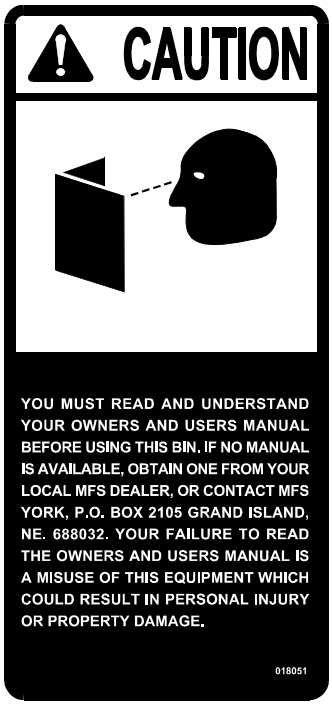
OSHA
OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970

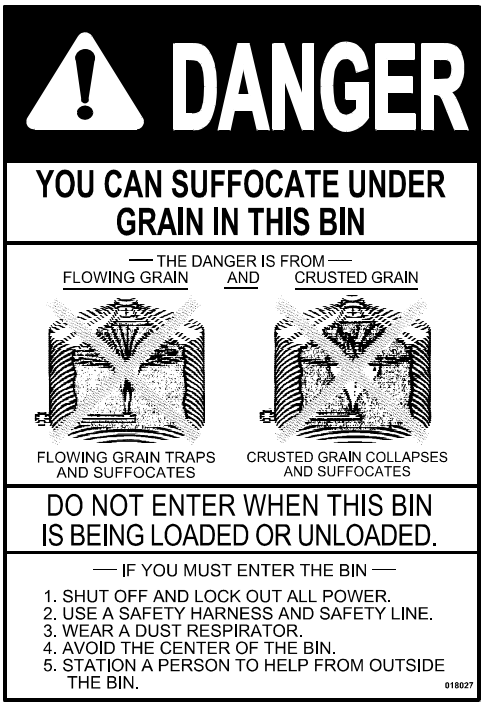
Certain purchasers of our products may be subject to the requirements and standards of the William-Steiger Occupational Safety and Health Act of 1970, which prescribes standards for use of appurtenances of our manufacture, such as handrails, platforms, stairways, fixed ladders, ladder cages, and guard rails. (Occupational Safety and Health Standards Section 1910.21 through 1910.32). Before installing these devices, familiarize yourself with the above Federal Standards.

At the time of manufacture, these **optional** items conform to applicable standards. MFS/ YORK/STORMOR assumes no liability with respect to proper constructed, inspection, assembly, or use of its products under applicable laws, all of which is the sole responsibility of the purchaser and those doing the assembly work.

Safety and operational decals as shown on the next two pages are installed on your Ezee Dry bin in the locations indicated. Be sure all of these decals are in their proper location on the bin and are in good condition. Check all safety decals and replace any that are worn, missing, or illegible. They may be ordered as any other part is ordered. See your dealer for additional information or contact the Factory direct at the address listed on the back cover of this manual.

Decal I.D. & Placement

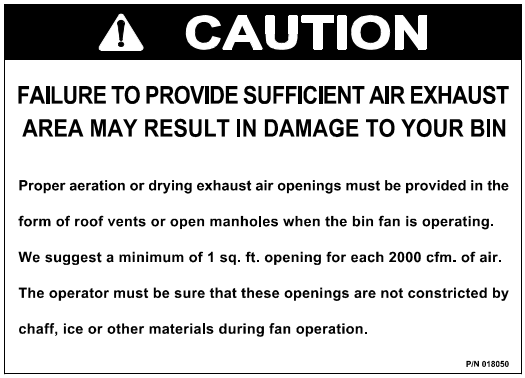

CAUTION
YOU MUST READ AND UNDERSTAND YOUR OWNERS AND USERS MANUAL BEFORE USING THIS BIN. IF NO MANUAL IS AVAILABLE, OBTAIN ONE FROM YOUR LOCAL MFS DEALER, OR CONTACT MFS YORK, P.O. BOX 2105 GRAND ISLAND, NE. 688032. YOUR FAILURE TO READ THE OWNERS AND USERS MANUAL IS A MISUSE OF THIS EQUIPMENT WHICH COULD RESULT IN PERSONAL INJURY OR PROPERTY DAMAGE.
018051


DANGER
YOU CAN SUFFOCATE UNDER GRAIN IN THIS BIN
— THE DANGER IS FROM —
FLOWING GRAIN AND CRUSTED GRAIN
FLOWING GRAIN TRAPS AND SUFFOCATES
CRUSTED GRAIN COLLAPSES AND SUFFOCATES
DO NOT ENTER WHEN THIS BIN IS BEING LOADED OR UNLOADED.
— IF YOU MUST ENTER THE BIN —
1. SHUT OFF AND LOCK OUT ALL POWER.
2. USE A SAFETY HARNESS AND SAFETY LINE.
3. WEAR A DUST RESPIRATOR.
4. AVOID THE CENTER OF THE BIN.
5. STATION A PERSON TO HELP FROM OUTSIDE THE BIN.
018027

Located on the inside of the manway lid and on the inside of the outer door cover.

DANGER
ROTATING FLIGHTING
THIS BIN IS EQUIPPED WITH AUGERS WHICH CAN KILL OR DISMEMBER.
KEEP CLEAR OF ALL AUGERS AND NEVER ENTER THIS BIN UNLESS ALL POWER IS DISCONNECTED AND LOCKED OUT.
FAILURE TO DO SO WILL RESULT IN DEATH OR SERIOUS INJURY.
P/N 06316

If augers manufactured by others are installed in conjunction with your bin, we strongly recommend that this or a similar decal be installed in a visible location on that equipment if not present.


CAUTION
FAILURE TO PROVIDE SUFFICIENT AIR EXHAUST AREA MAY RESULT IN DAMAGE TO YOUR BIN
Proper aeration or drying exhaust air openings must be provided in the form of roof vents or open manholes when the bin fan is operating.
We suggest a minimum of 1 sq. ft. opening for each 2000 cfm. of air.
The operator must be sure that these openings are not constricted by chaff, ice or other materials during fan operation.
P/N 018050

Located on the inner door panel.

CAUTION
KEEP DRY
WATER SENSITIVE MATERIALS
THIS BUNDLE MUST BE STORED IN A DRY, WARM ATMOSHPERE. IF THIS MATERIAL IS ALLOWED TO GET WET OR MOISTURE (CONDENSATION) IS PERMITTED TO FORM BETWEEN THE MATERIALS, SERIOUS DETERIORATION OF THE FINISH WILL OCCUR.
IF THIS BUNDLE GETS WET, SEPARATE AND DRY ALL MATERIALS IMMEDIATELY.
CLAIMS FOR DAMAGE RESULTING FROM EXPOSURE OF THESE MATERIALS TO MOISTURE WILL NOT BE HONORED.
mfs 018035

Put on sidewall sheet bundles before shipped.

CAUTION

THIS BIN IS LIMITED TO ONE OF THE FOLLOWING USAGES AS LISTED BELOW - IMPROPER USAGE WILL VOID ANY STATED WARRANTY APPLICABLE TO THIS PRODUCT.

S - DESIGNATES STORAGE BIN: D - DESIGNATES DRYING BIN H - DESIGNATES HEAVY DUTY BIN

SITUATION	S	D	H
MAXIMUM UNLOAD RATE (Bushels per hour)	2,500	7,500	15,000
SUPLEMENTAL HEAT ALLOWED	NO	YES	YES
MAXIMUM AIR FLOW IN CUBIC FEET PER MINUTE PER BUSHEL GRAIN	1/5	3	7
MAXIMUM ALLOWABLE MOISTURE CONTENT IN PERCENTAGE POINTS ABOVE USDA DRY GRAIN STANDARDS	3	15	Greater than 15
MAXIMUM LOAD/UNLOAD FREQUENCY PER YEAR	2	4	8
STIRRING DEVICES:			
36' DIAMETER AND SMALLER	NO	YES	YES
42' DIAMETER AND LARGER	NO	YES-2 Augers or less	YES
CONICAL HOPPER UNDER BIN ALLOWED	NO	NO	YES
APPROVED FOR SEISMIC LOAD	NO	NO	YES
RECIRCULATING/CONTINUOUS FLOW DRYER ALLOWED	NO	NO	YES

SEE YOUR CONSTRUCTION/SAFETY MANUAL FOR STANDARD WARRANTY AND OTHER SPECIFICATIONS.

mfs018036

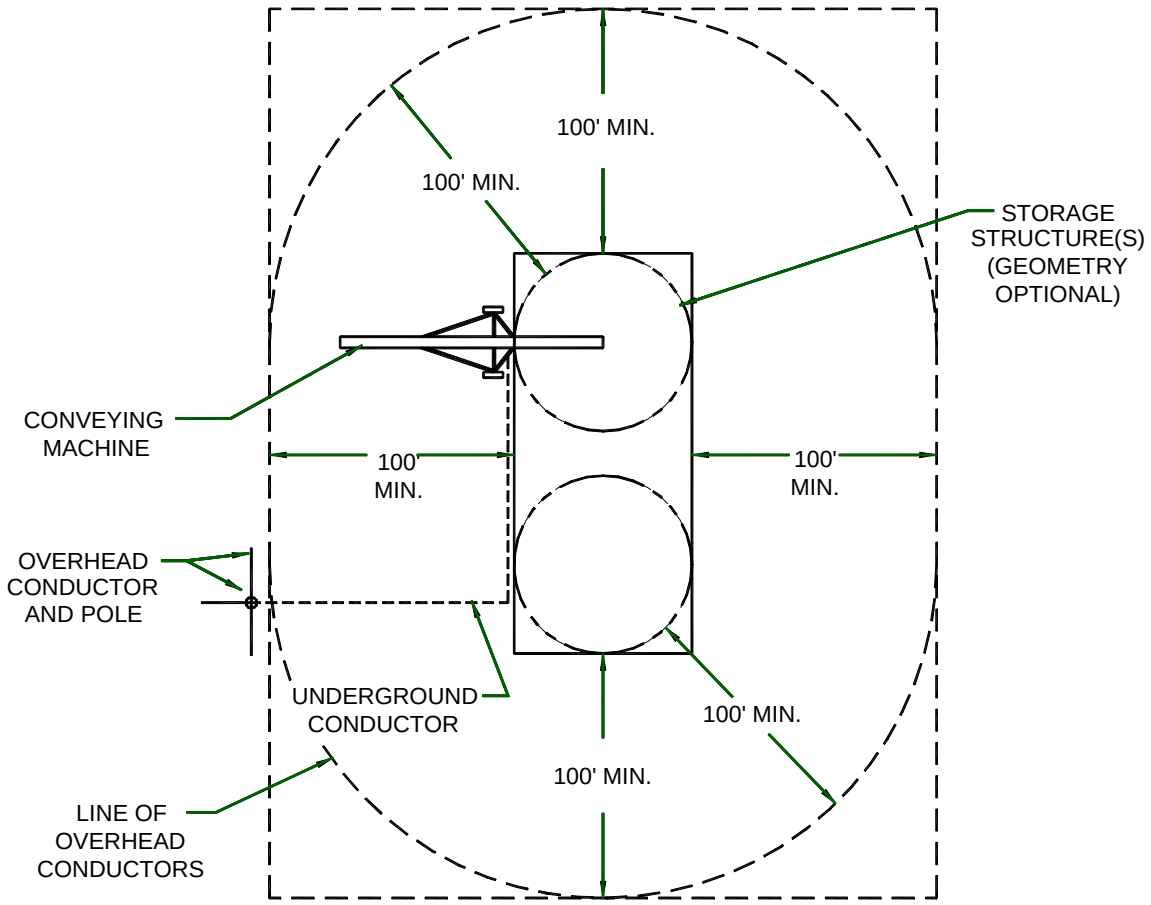
Your Ezee Dry bin has load carrying capabilities and restrictions that are equivalent to those listed for the Drying Bin.

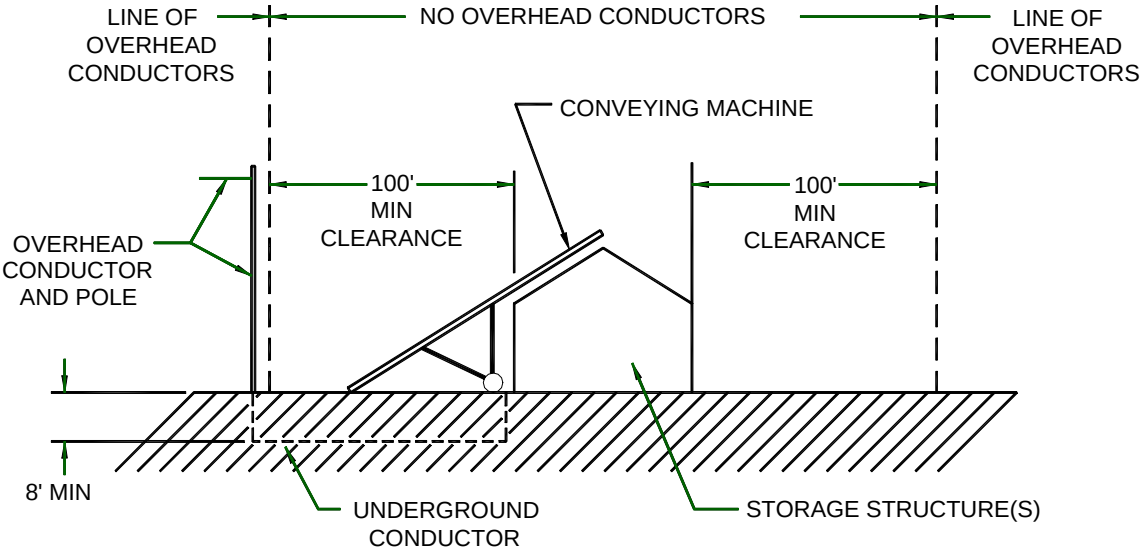
⚠ CAUTION

MFS/YORK/STORMOR GRAIN BINS ARE DESIGNED TO BE LOADED OR UNLOADED ONLY FROM THE CENTER. OFF-CENTER LOADING AND UNLOADING CREATES EXCESSIVE STRESS AND CAN CAUSE A FAILURE.

MFS 018039

Located on the inside at the outer door cover.





Minimum conductor clearances

ADDITIONAL SAFETY RECOMMENDATIONS

A. You may decide to buy and install "auxiliary equipment" made by other manufacturers. MFS/YORK/STORMOR has no control over the design and manufacture of this equipment. If you buy and install auxiliary equipment, then at a minimum we suggest that you do the following:

1. Obtain, read, and understand the instructions and cautions of the auxiliary equipment manufacturer. Be sure all equipment is installed according to the manufacturer's recommendations.
2. Check with MFS/YORK/STORMOR or your dealer to see if your bin is designed to support any additional loads supplied by the auxiliary equipment.
3. Obtain any applicable safety decals from the manufacturer of the auxiliary equipment and insure they are displayed in a visible location.
4. Review and understand the diagram on page 10 concerning minimum conductor clearances for conveyors and electrical storage structures.
5. Make sure all electrical equipment is properly grounded and installed by a qualified electrician.
6. Check the availability and operation of electrical lockout and emergency stop systems.
7. Be sure all guards or shields are securely in place.
8. Store all operations/maintenance manuals in a safe place available for future use.

B. In this and other manuals, shields and guards may have been removed for illustrative purposes. Do not operate the equipment without shields and guards in place. Failure to heed this warning may result in serious personal injury or death.

C. The relatively closed environment of a grain bin may promote the presence of toxic molds, hazardous dust, or a lack of oxygen. Never enter a bin without proper respiration equipment and someone else present to watch you.

D. Heed the warning decal shown top left on page 8. Flowing or crusted grain within a bin can cause a person to become buried and suffocate.

E. When climbing bin sidewall and roof ladders, take care not to fall into or from the bin. Common sense dictates that such appurtenances should not be used when conditions such as rain or wind preclude their safe use. MFS/YORK/STORMOR strongly recommends that optional climbing equipment be purchased to meet the current specifications set forth by OSHA or ANSI whether the individual operator is required by law to do so or not. A properly secured safety belt should be used at all times when performing operations work or maintenance on the bin roof and sidewall.

F. Care must be taken to avoid entanglement in equipment installed in or on the bin. Securely Lock out all power, be it electrical or PTO, prior to working on or near such equipment.

G. Field modification of the bin or auxiliary equipment without the authorization of the manufacturer may present unknown dangers to the operator and must be avoided.

Specifications

This bin is designed along guidelines which allow it to provide the owner years of service provided it is not used for purposes for which it was not intended. The sidewall gage specifications for your bin appear on the sidewall sheet layout on pages 48 and 49. The general material specifications for your bin are as follows:

WALLS

All wall sheets are of corrugated, galvanized steel with 2.66" corrugation.

Wall sheets have .90 oz. per square foot zinc coating (G-90 designation).

2.66" corrugation sheets have 32" vertical coverage. The half ring covers 13 1/3”.

Horizontal coverage of wall sheets is 112 1/2".

All 5/16" bolts are electro-galvanized grade 8.2 with self-sealing injection molded washers.

Sealer Strip is provided to seal all vertical sidewall seams.

Base Sealer is provided to seal between the bin and the concrete foundation.

Anchor Bolts are standard with all Ezee Dry bins.

STANDARD ROOFS

All single span sheets through 30' diameter are made of 22 gage galvanized steel
18'-30' bins have a 36" opening at the peak with a 2 1/4" rib height.

One manhole roof sheet is standard on each bin with a hinged lid and one of two sizes of openings. A 3.7 square feet of opening for 18’, 27’ and 30’ bins. A 2.6 square feet of opening for 21’ and 24’.

A roof ladder from the eave to the peak and a roof safety ring is standard with each bin.

Steep 32° roof slope.

All roofs, 21'-30' have 36 sheets per roof. The 18’ roof has 34 standard sheets and a double wide manhole sheet.

Roof sheets are attached to sidewalls with specially designed eave clips.

Loading:
Live Load - 25 pounds per square foot
Dead Load - 3 pounds per square foot
Wind Load - 20 pounds per square foot

Concentrated Peak Loading:
18'-30' - 2000 pounds

Specifications, cont'd

DOORS

On 2.66" corrugated bins, a single ring 32" door is standard on all sizes and a two ring 64" walk door is available as an option.

The standard location of the one ring door is in the second ring from the bottom. The standard location of the 64" door is in the second and third rings from the bottom. See page 45 for installation.

All 32" doors have two inner panels and an outer door cover and 64" doors have three inner panels and an outer door cover.

DESIGN CRITERIA

Bins are designed to store flowable, non-corrosive material with 48 pound bulk density (60 pound/bushel) maximum.

Bins are designed to be filled through the center roof opening only, and to be emptied only from the center. Any off-center unloadings should be used only for clean-out after discharge has been complete to the angle of repose.

Have your erector make all non-bin equipment in excess of the company's recommendations, like LEGS, WALK- WAYS, SPOUTING and CONVEYORS self supporting.

Do not overfill the bin roof area during final storage. This prevents proper air movement through roof vents and may also cause roof damage or failure.

Adequate ventilation area must be furnished to match the cubic foot per minute output of the crop drying and aeration fan installed on the bin. A rule of thumb would be, no more than 2000 cubic feet per minute per square foot vent opening. When you run your fans, make sure your VENTS ARE OPEN and kept clean of all debris and frozen matter. An aeration system can, without proper management, create a greater load on a roof than equipment or snow and can damage the bin roof

WARNING

Installation of accessories or equipment in or on a grain bin that would over stress the structure in any manner will void the Warranty. If you do not have specific recommendations from MFS/YORK/STORMOR, where additional loading is involved, please contact the Engineering Department of MFS/YORK/STORMOR before installing any such appurtenances or equipment.

EZEE DRY BIN CAPACITY TABLE

Rings	18'		21'		24'		27'		30'	
	Capacity	Batch	Capacity	Batch	Capacity	Batch	Capacity	Batch	Capacity	Batch
7 1/2	2820	540	3853	750	5054	1000	6331	1200	7834	1500
8 1/2	3384	540	4622	750	6051	1000	7600	1200	9401	1500
9 1/2	3948	540	5390	750	7059	1000	8869	1200	10968	1500
10 1/2	_	_	_	_	8061	1000	10138	1200	12535	1500
11 1/2	_	_	_	_	9063	1000	11407	1200	14102	1500

1. Bin capacities are approximate figures. The capacities shown above are based on 1.25 cubic feet per bushel and a compaction factor of 6% in accordance with ASAE voluntary standards.

2. Capacities are in bushels calculated as follows:

Capacity:

Grain loaded level 2 rings below the Ezee Dry tension angle less 13” floor.

Batch:

The amount on the plenum floor during a batch drying cycle.

CAUTION

All galvanized steel is subject to oxidation, sometimes called “white rust” when exposed to moisture from any source. Care should be taken to protect sidewall sheets and roof sheets as much as possible. **INSIDE STORAGE IS ADVISABLE**. When on the job site, sheets should be placed on edge far enough apart to allow air to circulate freely.

CHECK DELIVERY

Your bin has been carefully checked before shipment. However, you should check your shipment upon arrival using the Packing List provided to insure it is complete.

SIDEWALL SHEET IDENTIFICATION

As an aid in identifying corrugated sheets on the packing list a series of codes are used in the description. Typically the description begins with "COR SHT XX-YYZ ...." Where XX is the diameter of the bin; YY is the gage; and Z is one or more alpha numeric code designations. The codes used are as follows:

5 = Half sheet for entrance collar
6 = Door sheet for double punched sheets
7 = Door sheets for single punched sheets
E = Sidewall sheet punched for Ezee Dry Stiffener
F = Sidewall sheet punched for flashing
H = Half height top sheet
N = Ezee Dry fan entrance sheet
P = Double punched sidewall sheet
R = Ezee Dry tension ring sheet
T = Transition sheet

Examples:

COR SHT 18-17EF is an 18' diameter sheet punched for Ezee Dry stiffeners and flashing.

COR SHT 30-19ER is a 30' diameter sheet punched for Ezee Dry stiffeners and the tension ring.

TORQUE specifications for the fasteners that bolt your bin together are listed below. Have your contractor demonstrate that he is giving you the correct torque.

Bolt Size	Torque (ft/lbs)
5/16" Grade 8.2	25
3/8" Grade 5	31

When you load or unload grain, always do it from the center. This creates an even load on the structure. Only use your intermediate sumps for **CLEAN-UP**. Off-center loading and unloading creates excessive **STRESSES** and can cause a failure.

All bins should be filled at the center of the peak ring with an auger or spout of adequate length to allow grain to drop straight down into the bin.

Do not cut openings in bins. This reduces the structural strength of the unit and can cause partial or complete failure.

Site Location and Concrete

CHECK YOUR SITE FOR POSSIBLE PROBLEMS WITH:

1. Local Codes and/or Permits
2. Power lines
3. Highways
4. Waterways and run off
5. Poor soil conditions
6. Seismic load
7. High wind or Snow load area
8. Railroads
9. Other possible soil problems (tunnels, etc.)
10. Hoppered Bins

CHOOSING A BIN SITE

Consideration should be given to convenience in loading and unloading and accessibility to existing and planned facilities. The site should be level, on firm soil, with adequate drainage. Any fill used in leveling the site MUST BE well compacted to prevent uneven settling from the weight of the foundation, bin and contents. After the site is completely level, use 1" to 2" of fill sand to act as a cushion under the concrete slab.

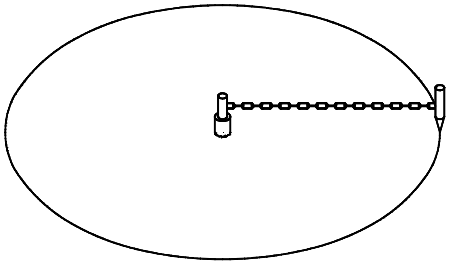
Standard foundation drawings and specifications are furnished by MFS/YORK/STORMOR showing soil bearing pressures required. It is the obligation of the purchaser to obtain a soil bearing test and ascertain that the foundation has sufficient strength for a capacity filled bin. Unless the finished foundation is level and true, and the site properly graded for water drainage, failure of the footing and foundation could result. This is not covered by the MFS/YORK/STORMOR warranty.

At the time your soil is being compacted and the foundation is being poured, make sure that the work is being done in exact accordance with your Soil Engineer's specifications. **Remember** - if your soil isn't right, your foundation could TIP AND CRACK - if your **foundation** isn't right, your Bin could fail. The foundation drawings on the following pages are intended as a guide only and are not to be interpreted as "**firm**" instruction. If at a later date, the bin is increased in height, the foundation may not be adequate.

Anchor bolts should be to specifications and be set when pouring the foundation as improper anchoring will give you a WEAK structure. The bin is ROUND; to keep it round, the anchor bolts should follow a SCRIBED CIRCLE with the correct chord dimensions between the anchor bolts.

The base ring of the bin must rest firmly on the concrete foundation with absolutely no overhang.

1. Lay out the foundation by driving a small pipe to mark the center of the pad. The top of the stake should be the height of your foundation.
2. Using the pipe for a center pivot, you can use a chain with a sharp stake attached to the outer end to scribe on the ground the diameter of your foundation. (A board can be used in place of the chain.)
3. After pouring the concrete, and while it is still soft, locate your anchor bolts. Use the center pipe and chain again to mark the correct diameter to set the anchor bolts. Use a measured chain (or chord) to get the correct spacing between holes.



FOUNDATION NOTES:

1. The foundation site should be well drained and free of vegetation and/or debris.

2. Foundation(s) should be on undisturbed soil or engineered compacted backfill.

3. A soil and foundation (Geotechnical) investigation should be conducted for each site to confirm the soil bearing capacity .

4. Foundation Design is based on an allowable soil bearing capacity of 3,500 psf.

5. The concrete shall have a minimum compressive strength of 3,000 psi. at 28 days.

6. Concrete should be allowed to cure 7 days before beginning the tank assembly and 28 days before filling the bin.

7. Concrete should be kept level to ±1/8" in 10' and 1/2" across the diameter. High spots or debris should be removed prior to setting the bin.

8. Anchor bolts need to be properly located based on the chart, found on page 19 of this manual, in order to keep the tank round.

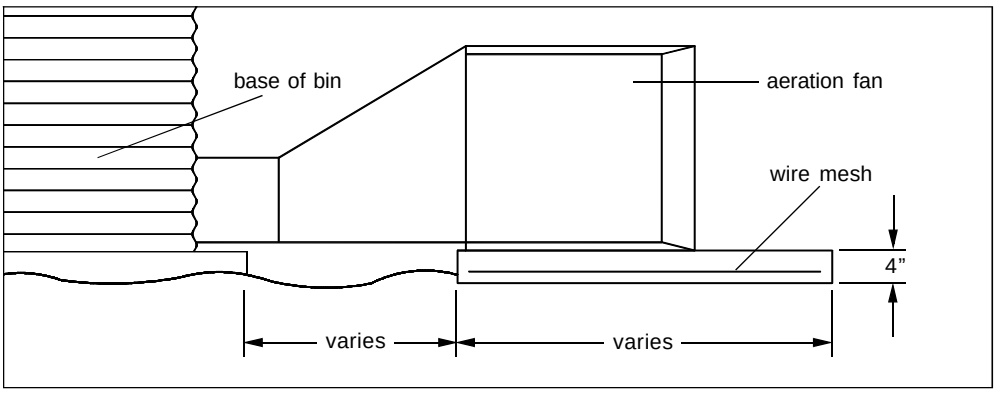
9. All reinforcing rod for concrete reinforcement shall conform to ASTM A615, Grade 60.

10. Rebar should lap a distance equal to (24 * Rebar Dia.). Minimum allowable lap is 18" - i.e: #6 Rebar has a diameter of 6/8" =.75" * 24=18" or an 18" lap.

11. Estimates for Rebar do NOT include allowances for the lap.

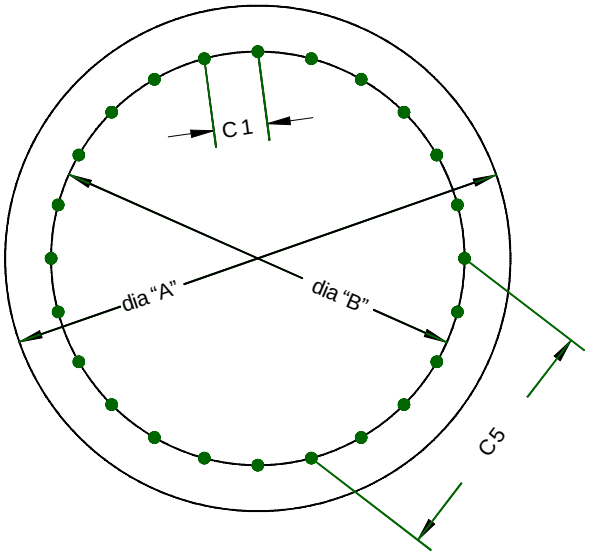
12. Foundation details in this manual are to be considered general in nature and are intended only as a guide. It is the owner's responsibility to provide an appropriate site and foundation design for the adequate support of the grain bin. MFS/YORK/STORMOR assumes no responsibility for results arising from these suggestions.

13. Fig. a below depicts a typical support pad for aeration. The dimensions should work for most applications, but may vary depending on the manufacturer of the fan and transition.

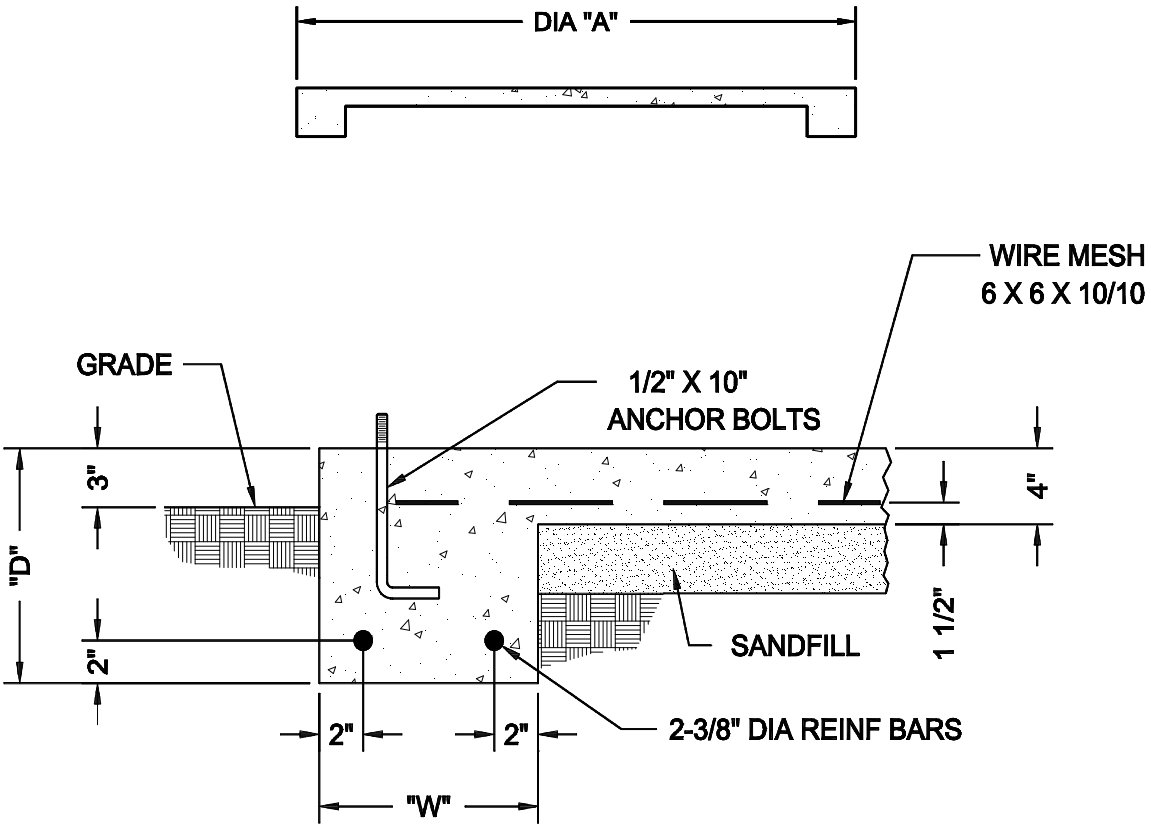


(a) AERATION TYPICAL SUPPORT PAD

Foundation Plan



Foundation Plan View



Foundation Cross Section

FOUNDATION SPECIFICATIONS

Anchor Bolt Data

Bin Diameter	dia "A"	dia "B"	Chord "C 1"	Chord "C 5"	Anchor Bolt Qty
18'	18' - 10"	18' - 2 5/8"	37 15/16"	13' - 11 1/2"	18
21'	21' - 10"	21' - 2 3/8"	37 7/8"	14' - 5"	21
24'	24' - 10"	24' 2 1/4"	37 27/32"	14' - 8 11/16"	24
27'	27' - 10"	27' - 2"	37 13/16"	14' - 11 1/8"	27
30'	30' - 9"	30' 1 7/8"	37 13/16"	15' - 0 7/16"	30

Concrete & Rebar Data
up to 9 1/2 Rings

Bin Diameter	dim "D"	dim "W"	Concrete Cubic Yds	Wire Mesh Square Feet	#3 Rebar Lineal Feet
18'	15"	12"	4 3/4	197	96'
21'	15"	12"	6 1/4	278	115'
24'	15"	12"	7 3/4	328	134'
27'	15"	12"	9 1/2	484	153'
30'	18"	18"	11 1/2	608	172'

Concrete & Rebar Data
up to 11 1/2 Rings

Bin dia	dim "D"	dim "W"	Concrete Cubic Yards	Wire Mesh Square Feet	#3 Rebar Lineal Feet
24'	15"	24"	13	484	153'
27'	15"	24"	15 1/2	608	172'
30'	18"	30"	22	742	190'

Important Pre-Assembly Info

SIDEWALL SHEET IDENTIFICATION

The bin wall sheets are color coded on the end of the sheets for easy reference as follows:

Green/Gray	-	19 Gage	Yellow/Black	-	13 Gage
Red	-	17 Gage	Black	-	12 Gage
Blue/Yellow	-	15 Gage	Orange	-	11 Gage
Yellow	-	14 Gage			

To determine the number of sheets per ring, divide the bin diameter by three:
ie: 24' diameter bin divided by 3 = 8 sheets per ring.

BIN HARDWARE AND WHERE IT IS USED

#12 x 3/4” self drilling screw
Used to attach the flashing sealer to the flashing

1/4” x 3/4” bolts and flange nuts
Used to bolt the dump hoppers to the plenum sheets

1/4” x 1” bolts and (2) nuts
Used to bolt the dump chutes to the dump hoppers

5/16" x 1" bin bolts w/ seal washer and nuts
Used in bin sidewall sheets and roof sheets
Used around the door.
Used on the stiffeners
Used at the door and step across platforms
Used at the roof rafter braces
Used at grain bands

5/16" x 1-1/4" bin bolts w/ seal washers and nuts -
Used to bolt the bottom sidewall sheet to the base angle
Used at the tension angle splices
Used at the horizontal seam between the top half sheet and the first full sheet

5/16” x 2 3/4” bolts and nuts
Used at the tension angle / horizontal sidewall seam
Used to bolt the plenum sheets to the plenum rafters

5/16" Flange nuts -
Used under all roof ribs and at plenum sheets
Used at all stiffeners
Used at the tension angle
Used at the perforated roof flashing
Used at the grain bands

5/16" Metal backed neoprene washer
Used at the horizontal sidewall seam with the 5/16” x 2 3/4” bolts

Bin Hardware, cont'd

3/8" x 1" Hex bolts, flat washers and nuts
- Used to assemble the fan platform
- Used at the winch on batch units

1/2" x 1" Hex bolts
- Used to bolt the center collar to the support channels

1/2" x 1 1/2" Hex bolts, flat washers and nuts
- Used to bolt the plenum rafters to the tension angle and center collar

1/2" x 2" Hex bolts, lock washers and nuts
- Used at the pulleys

1/2" x 10" Anchor bolts, washers, nuts
- Used to secure the bin to the foundation

Sealer tape
- Used on bin wall seams (one strip vertically and 6-12" horizontally)
- Used both vertically and horizontally around door frame

Roof eave clip
- Attaches the top ring of the sidewall sheets (place on the outside). The top set of holes puts the roof in a lowered position for a storage application and the bottom set puts the roof in a raised position to facilitate drying.

Roof Cap hardware
- Roof cap slide rod bracket
- Roof cap hold down bracket
- Roof cap slide rod tab

Roof manhole hardware
- Manhole hinge
- Manhole hinge bracket
- Manhole latch catch
- Manhole latch slide
- Manhole latch bushing

Door Hardware
- Outer door clip
- Striker plate
- Door T-handle
- #8 x 3/8" screw
- #8 external tooth lock washer
- #8-32" hex nut
- 1/4" x 1/2" Hex bolt and flange nuts

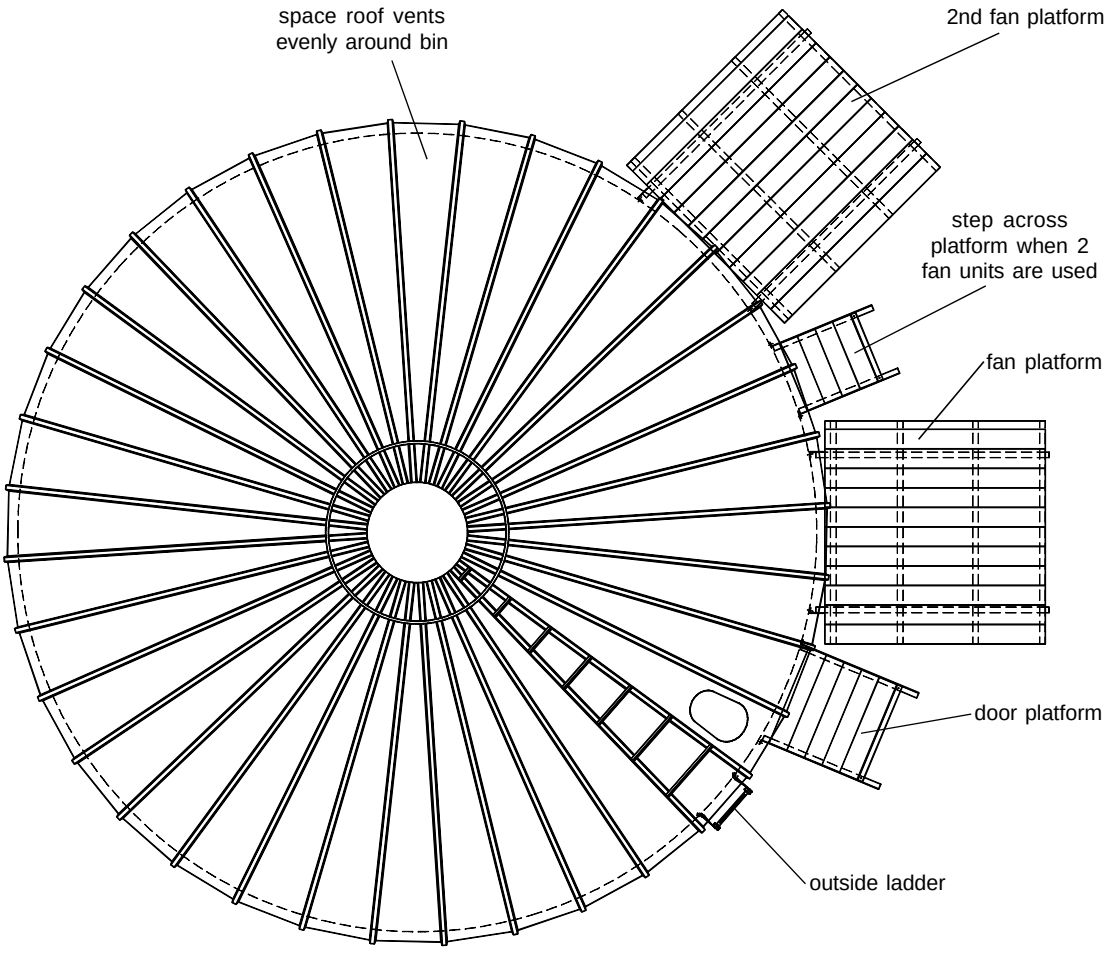
UNDER NO CIRCUMSTANCES SHALL ANY OTHER BOLT BE SUBSTITUTED FOR THOSE SUPPLIED BY MFS/YORK/STORMOR

GENERAL ASSEMBLY INSTRUCTIONS

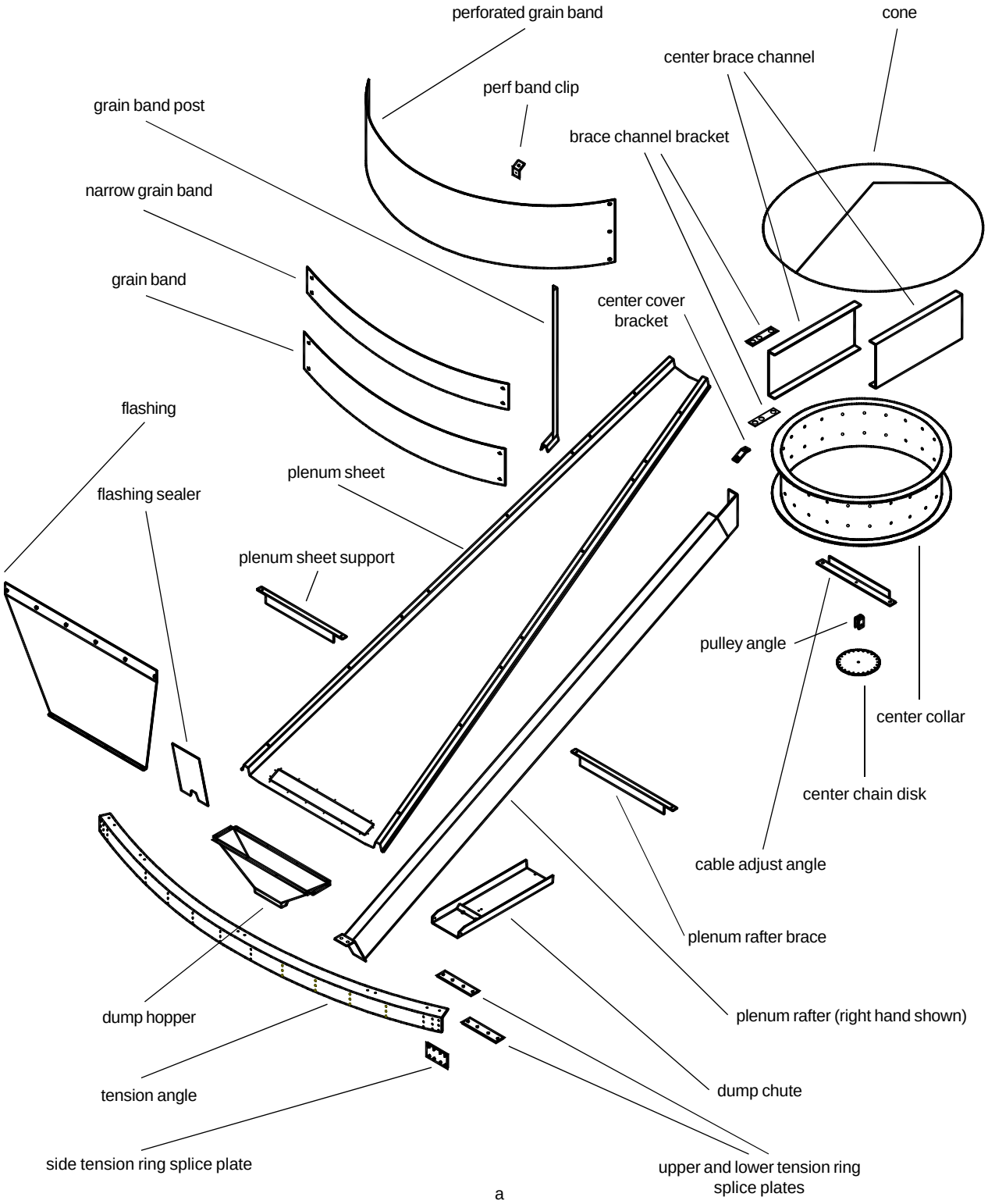
1. Build the top two full height sidewall rings.
2. Install the tension angle segments.
3. Locate the signs and install the top set of 2 ring stiffeners.

4. Fasten the plenum rafters to the tension angle and center collar.
5. Space the plenum rafters with the plenum sheet and plenum rafter supports
6. Pre-install the dump hoppers and flashing to the plenum roof sheets.
7. Locate all plenum roof sheets and tighten all bolts.
8. Place all of the grain bands on the plenum floor.
9. Install the top half sidewall ring.
10. Assemble the roof to the top sidewall half ring.
11. Fasten the dump chutes, chain, pulleys, etc. to the Ezee Dry unit, and string the dump chute lift cable through the sidewall.
12. Install all the grain band rings and flashing sealer plates.
13. Lift the bin and add the third and fourth full sidewall rings, bolting the fan entrance frame into position.
14. Assemble the platforms.
15. If the bin utilizes Vac-u-vents, bolt the upper rod section to the roof.
16. Continue building the bin by adding sidewall sheets, stiffeners and ladder.
17. Install the door into the 2nd ring (1 ring door) or 2nd & 3rd rings (2 ring door).
18. At the base of the bin install the base angle, connectors, clips and keepers. Seal the bin to the concrete.
19. Field cut the bottom ring for the aeration transition.
20. Assemble the floor using the instructions in the floor bundle.
21. Install the winch (batch unit) or hydraulic pump unit (continuous flow) and the controls.

Prior to construction, care must be taken to decide where all the accessories will be located. Below is a typical site layout showing locations of the ladder and platforms. In addition to these, consideration must be given to the location of the electrical and gas service, the control unit, the winch/hydraulic unit, unloading auger, entry door as well as any other equipment that may be involved. Please note that the control unit should be placed on the north or east side, out of direct sunlight.



Dryer Parts Identification



a

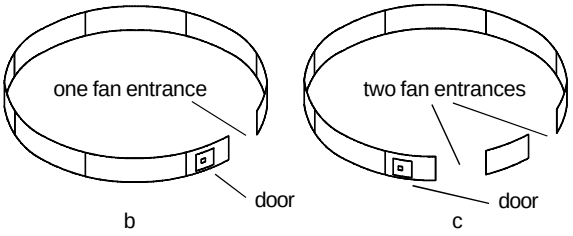
Assembling the Bin

STEP 1

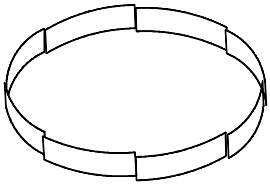
Bin Assembly

25

Sort the sidewall sheets according to the layout shown in this manual (page 48 - 49) by gage according to color code. Stand the sheets on edge according to the sequence in which they will be used on the bin pad near the location where the wall will be placed.



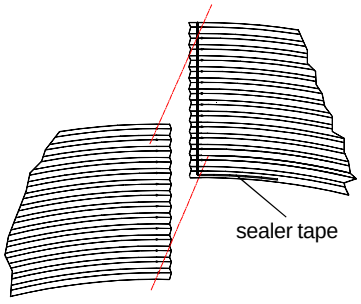
b c



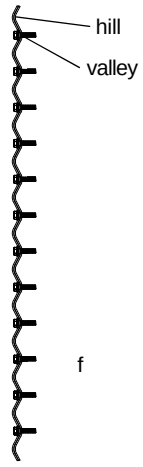
d

STEP 2

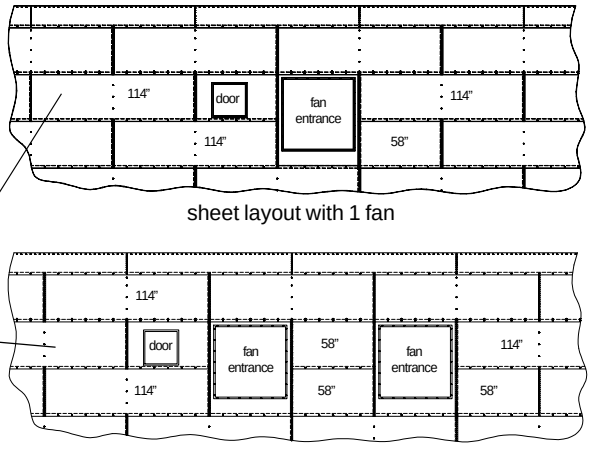
Build the second full width sidewall ring from the top of the bin on the pad first (fig. b and c). Refer to the sidewall gage schedule on page 48 - 49. Make sure to use the proper number and style of sheets so the diameter of the bin is correct. Make sure each sheet overlaps its adjoining sheet in the same direction (fig. d). For Ezee Dry bin door and fan unit locations refer to fig. g. Make sure to use sealer tape on the vertical sheet seams of these and all other corrugated sheets in your Ezee Dry Bin (fig. e). Install 5/16" x 1" Bin Bolts in the "outside corrugation valleys" of the vertical sheet seams at this time (fig. f) as the Vertical Outside Stiffener Bolts will be added later in the "hill" holes of the sheets.



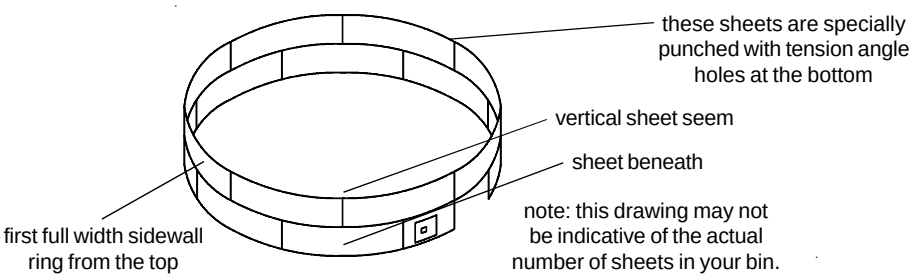
e

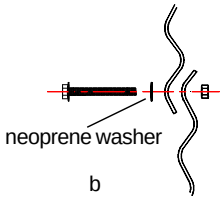


f



g

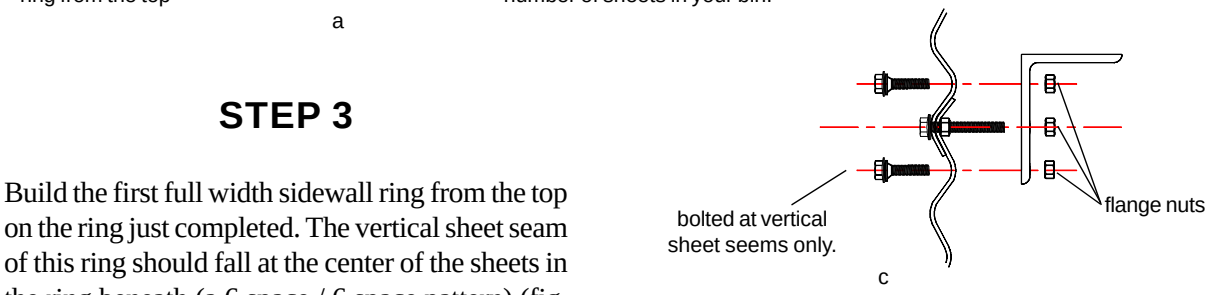

these sheets are specially punched with tension angle holes at the bottom
vertical sheet seem
sheet beneath
first full width sidewall ring from the top
note: this drawing may not be indicative of the actual number of sheets in your bin.
a



b

STEP 3

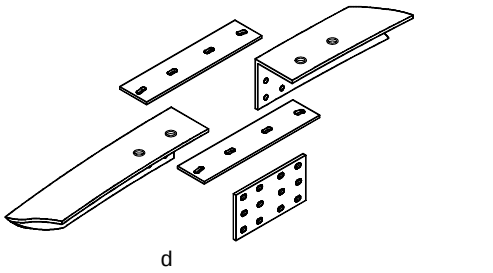
Build the first full width sidewall ring from the top on the ring just completed. The vertical sheet seam of this ring should fall at the center of the sheets in the ring beneath (a 6 space / 6 space pattern) (fig. a). This pattern is maintained throughout the bin construction. Again place the 5/16" x 1" Bin bolts in the "valley" holes only to allow later stiffener placement. The top bolt should be installed with the head on the inside. Install 5/16" x 2 3/4" Bin bolts (fig. b) in the horizontal sheet seam between the two rings and fully tighten using a deep well impact socket. These nuts prevent the corrugation from collapsing when the tension angle segments are added. Leave one horizontal seam bolt out where the sign will be fastened.

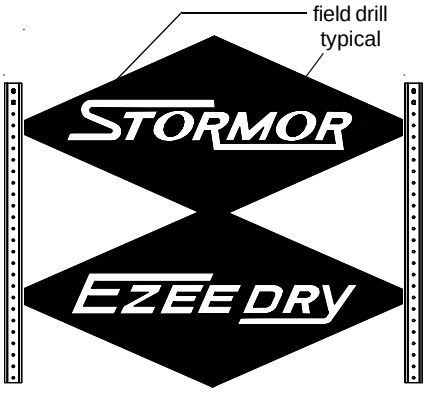


c

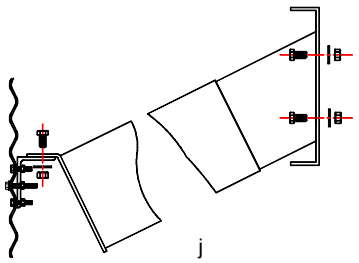
STEP 4

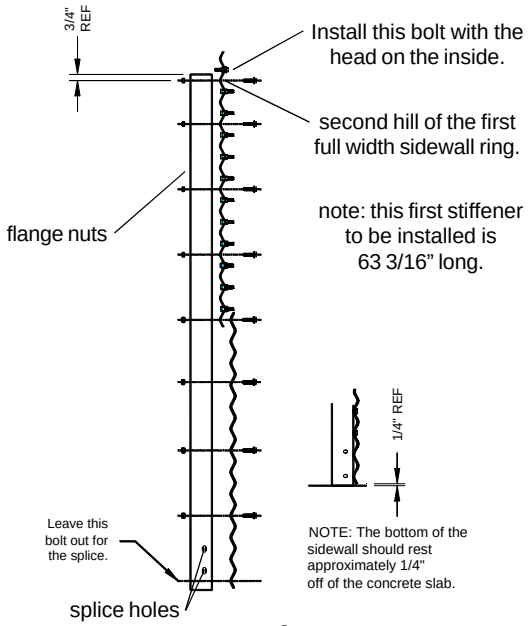
Install the tension angle segments over the bolt shank protrusion on the horizontal sheet seam in the "middle" hole of the angle segment (fig. c). Orient the angle so that the "bottom" holes fall on a vertical sidewall sheet seam. Start nutting on one end of the angle and work your way to the other end tightening as you go using 5/16" flange nuts. It may be helpful to use a small hammer between the tension angle and the sidewall sheet to align the long bolt shank with the corresponding hole in the angle. Install the remaining tension angle segments in a like manner. At the holes in the ends of the tension angles, where they will splice together, drill through the sidewall sheet. Bolt through the sidewall sheet, tension angle and splice plates (fig. d) using 5/16" x 1 1/4" bin bolts. Also install the upper and lower splice plates at this time.


d

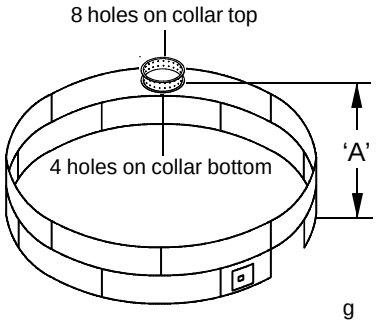


i


j


3/4" REF
Install this bolt with the head on the inside.
second hill of the first full width sidewall ring.
flange nuts
note: this first stiffener to be installed is 63 3/16" long.
1/4" REF
Leave this bolt out for the splice.
NOTE: The bottom of the sidewall should rest approximately 1/4" off of the concrete slab.
splice holes

e

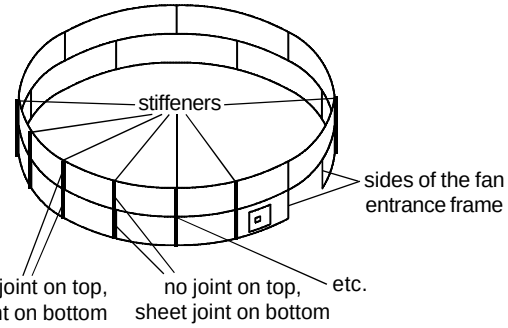


Bin Dia	"A"
18'	5' 7 1/4"
21'	6' 4 1/4"
24'	7' 1 1/8"
27'	7' 10 1/8"
30'	8' 7"

g

STEP 6

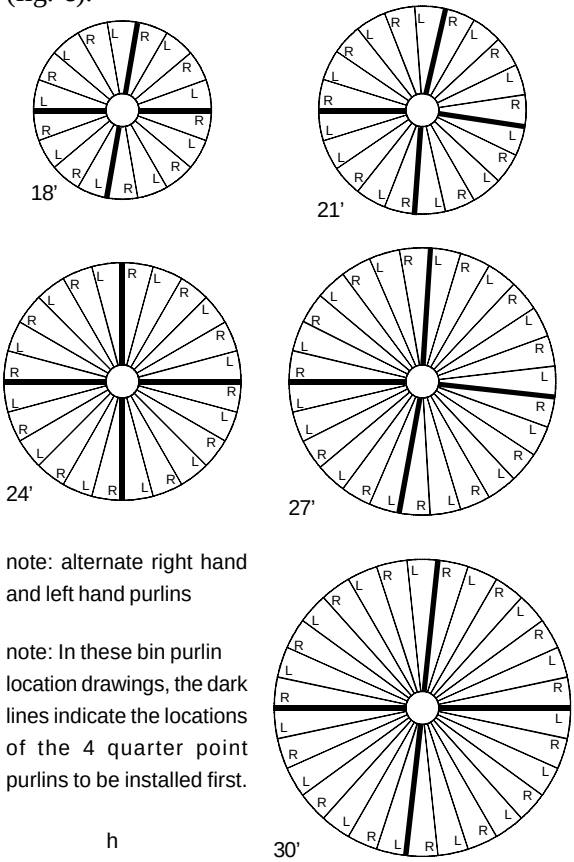
Locate the Ezee Dry Center Collar in the center of the bin at the height shown in Fig. g on a center jack platform. The collar flange with (8) 9/16" holes should be to the top. Install four of the Ezee Dry Rafter Purlins at the quarter points of the bin. Bolt each to the center collar using (2) - 1/2"x1 1/2" grade 5 bolts with nut and flat washer and to the tension angle using (2) - 1/2"x1 1/2" grade 5 bolts with nut and flatwasher. Install the remaining rafters alternating left hand and right hand assemblies (fig. h and page 26 - fig. j), but do not fully tighten the rafter bolts until the perforated inner roof sheets are installed. Make sure that the rafters are not "racked" and the center collar is level and not twisted before proceeding. If these conditions are present, correct by attaching a comealong to the center collar and bin wall; tighten to remove any twist or rack. Leave the come-along in place until the inner roof is completely assembled.



f

STEP 5

Locate the sign sheets in their previously determined location and fasten them to the sidewall by field drilling as shown in fig. i on page 26. Install 63 3/16" stiffeners (two per sidewall sheet) in the vertical seams at all sheets on both rings (fig. e). Use 5/16" x 1" bin bolts and flange nuts for this connection, with the bolt heads to the inside. Use a drift pin or screw driver to lift the sidewall rings slightly when installing the stiffener as they will protrude about 1/4" beneath the sheet edge. Omit the stiffeners on either side of the fan entrance frame at this time (fig. f). The top hole in the stiffener aligns with the hole in the second outside hill of the first full width sidewall ring (fig. e).



note: alternate right hand and left hand purlins

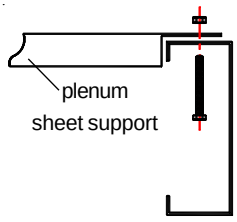
note: In these bin purlin location drawings, the dark lines indicate the locations of the 4 quarter point purlins to be installed first.

h

STEP 7

Referring to Fig. a, install the plenum sheet support angle in the second hole up from the eave end by placing a 5/16" x 2 3/4" bolt with it's shank pointed upwards thru the top flange of the rafter, and both holes of the plenum sheet support, followed by a 5/16" nut. Tighten these nuts at this time. Next, bolt the plenum rafter braces into place below the plenum rafters at this time using a 5/16" x 1" bin bolt with its shank pointed upwards (fig. b) Then, install an inverted 5/16" x 2 3/4" bin bolt thru each rafter at the upper grain band support post location and at each other purlin hole that receives a grain band support post location and at each other purlin hole that receives a grain band support post (fig. j on page 29). Finger tighten these bolts at this time.

a



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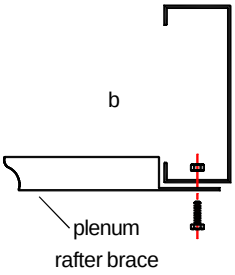
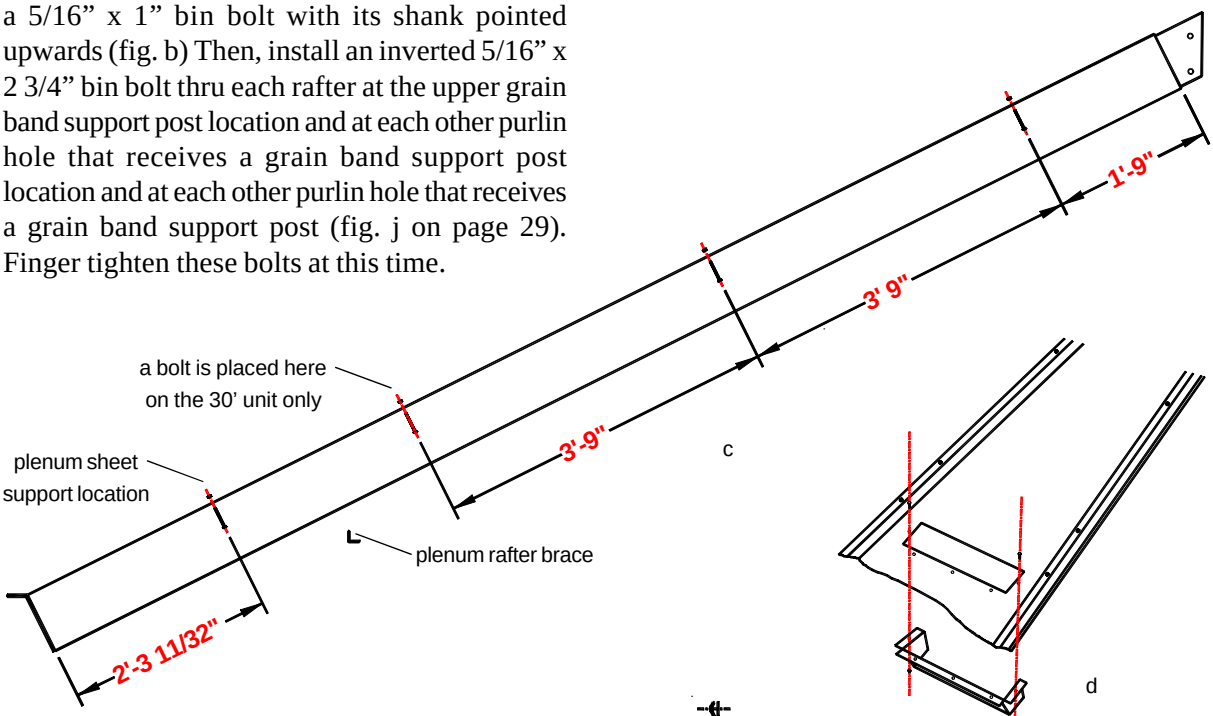
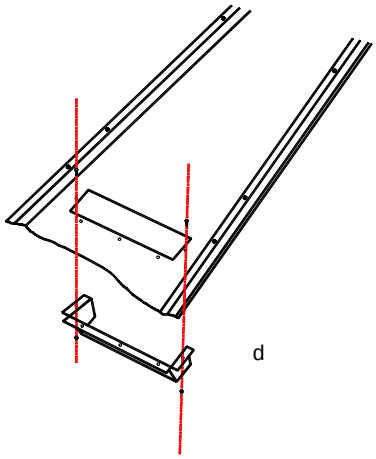
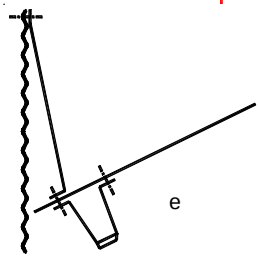




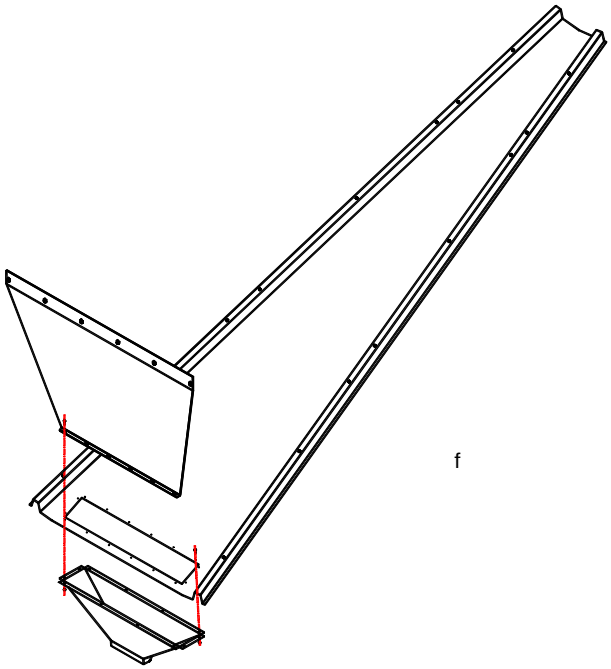
c



d



e



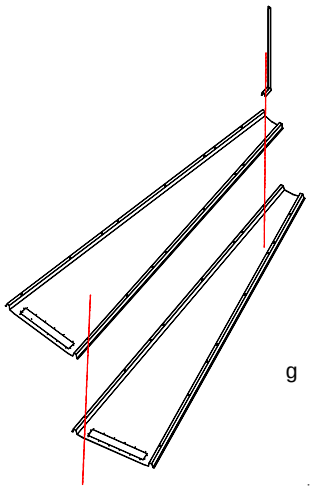
f

STEP 8

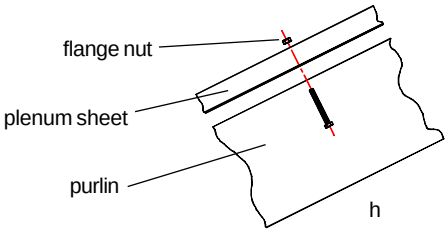
Preassemble the flashing and dump hopper to the plenum sheet before placing the plenum sheets. Bolt the sidewall flashing together with the plenum sheet and dump hopper with 1/4" x 3/4" bolts and flange nuts (fig. e and fig. f). Note: the dump hopper fastens below the plenum sheet. If you are building a 30' batch dryer you should also install the upper dump hopper necks at this time using 1/4 x 3/4" bolts (fig. d).

STEP 9

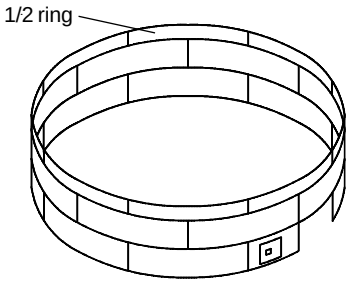
Install the perforated plenum roof sheets over the rafters by pushing the corresponding rib holes over the inverted long bolts in the rafter (fig. h). After the adjacent roof sheet is placed and the rib lap is made, install a 5/16" flange nut over the protruding bolt shanks and finger tighten. Now locate and install the grain band support posts (fig. g and h) If your Ezee Dry is a 30' batch unit, ten of the inner roof sheets will have upper dump hoppers in addition to the lower dump hoppers. Space these sheets uniformly around the bin. Continue around the bin installing the perforated plenum roof sheets in a like manner until all are in place. Next, Install 5/16 x 2 3/4" bolts in all remaining plenum sheet rafter holes. Install the lower, and, if applicable, upper plenum rafter supports in the holes at the lower rafter flange using 5/16" x 1" bin bolts. At this time, all remaining untightened bolts in the plenum sheet and rafters including the 1/2" rafter bolts may be tightened. Since the grain band assemblies are best left off to provide working space until the outer roof is installed, place all bands distributed around the plenum roof near the bin sidewall for ready availability later. (see pages 30-31)



g



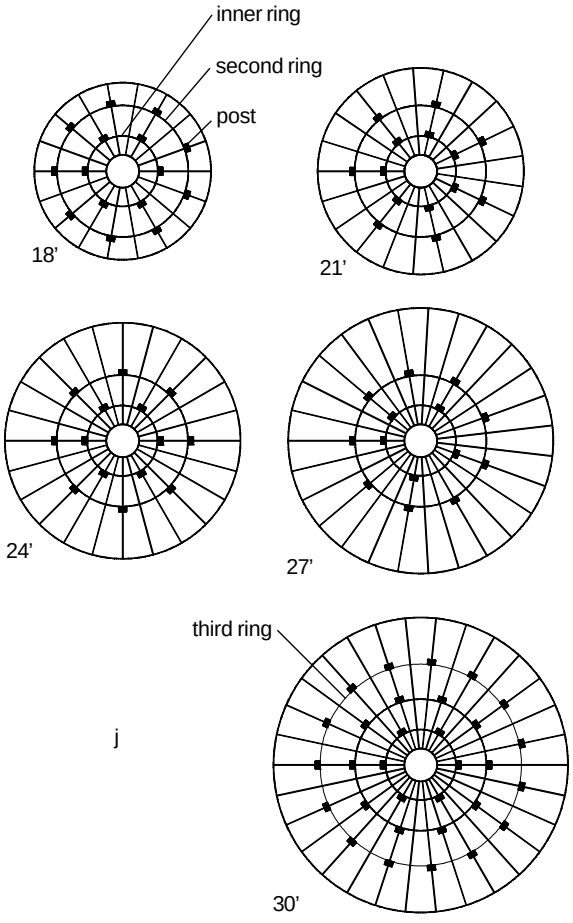
h



i

STEP 10

Install the top half ring on the first full width ring using 5/16" x 1" bin bolts in the vertical seams and 5/16" x 1 1/4" bin bolts in the horizontal seam and fully tighten all bolts (fig. i). The top horizontal seem hole should be spaced at 3 1/8" to facilitate roof construction. The sidewall flashing will be placed over the 1 1/4" bolt shanks.



j

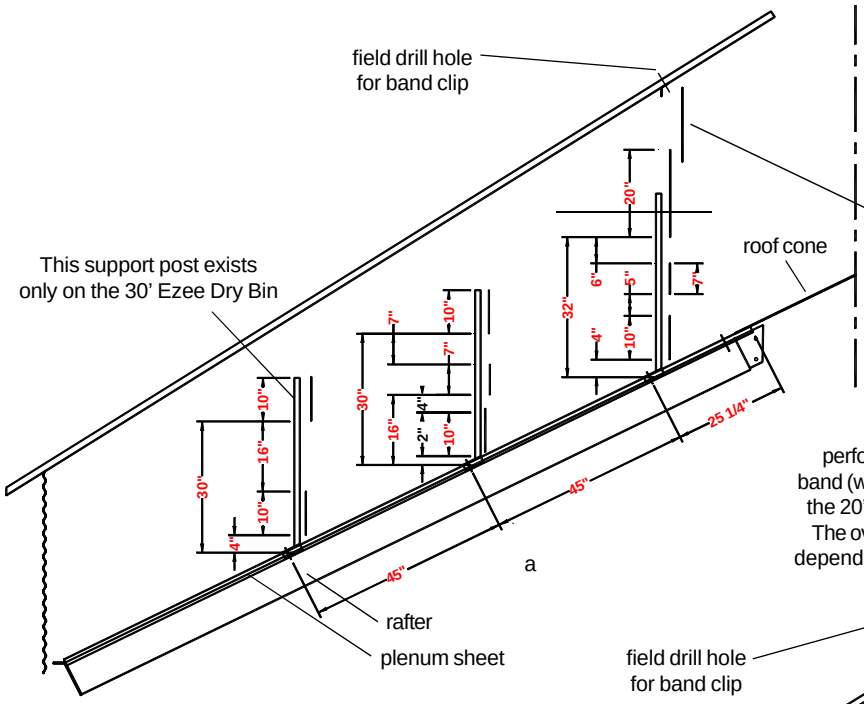
Grain Band Layout for Batch Bin Dryers

Dia	Inner Ring			2nd Ring			3nd Ring		
	Part No.	Size	Qty	Part No.	Size	Qty	Part No.	Size	Qty
18' & 27'	015097	18" x 90" Perf	3				N/A		
	015090	20" x 90"	3	015125	10" x 117"	10			
	015091	10" x 90"	3	015126	7" x 117"	5			
	015092	7" x 90"	3						
21'	015097	18" x 90" Perf	4				N/A		
	015090	20" x 90"	4	015093	10" x 76"	14			
	015091	10" x 90"	4	015094	7" x 76"	7			
	015092	7" x 90"	4						
24'	015097	18" x 90" Perf	3				N/A		
	015090	20" x 90"	3	015095	10" x 67"	16			
	015091	10" x 90"	3	015096	7" x 67"	8			
	015092	7" x 90"	3						
30'	015097	18" x 90" Perf	3						
	015090	20" x 90"	3	015125	10" x 117"	10	015125	10" x 117"	16
	015091	7" x 90"	3	015126	7" x 117"	5			
	015092	7" x 90"	3						

Grain Band Layout for Continuous Flow Bin Dryers

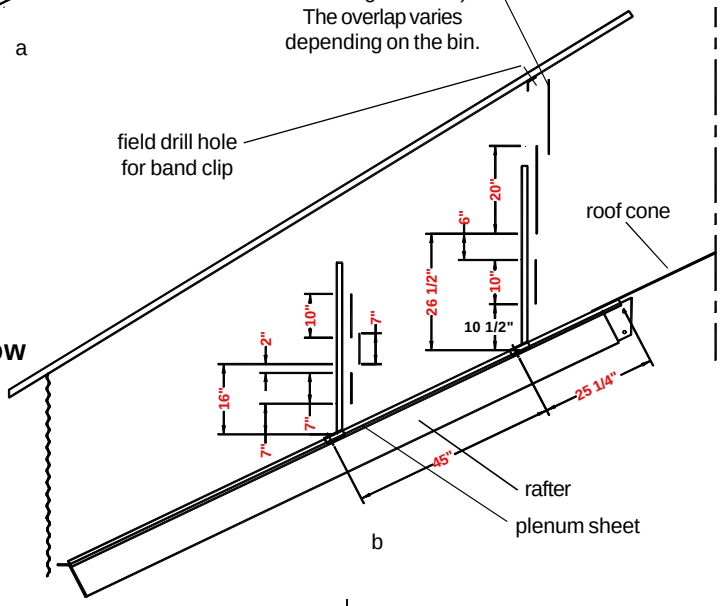
Dia	Inner Ring			2nd Ring			3rd Ring		
	Part No.	Size	Qty	Part No.	Size	Qty	Part No.	Size	Qty
18' & 27'	015097	18" x 90" Perf	3				N/A		
	015090	20" x 90"	3	015125	10" x 117"	5			
	015091	10" x 90"	3	015126	7" x 117"	10			
21'	015097	18" x 90" Perf	4				N/A		
	015090	20" x 90"	4	015093	10" x 76"	7			
	015091	10" x 90"	4	015094	7" x 76"	14			
24'	015097	18" x 90" Perf	3				N/A		
	015090	20" x 90"	3	015095	10" x 67"	8			
	015091	10" x 90"	3	015096	7" x 67"	16			
30'	015097	18" x 90" Perf	3						
	015090	20" x 90"	3	015125	10" x 117"	10	015125	10" x 117"	8
	015091	10" x 90"	3	015126	7" x 117"	5	015126	7" x 117"	16

Batch Drying Ezee Dry Support Post Layout



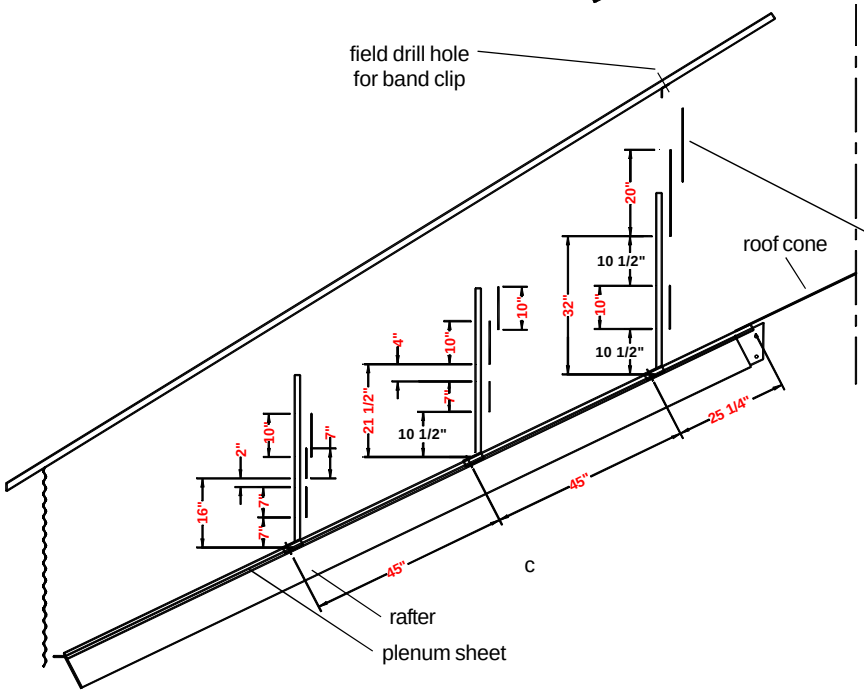
a

18' - 27' Continuous Flow Ezee Dry Support Post Layout



b

30' Continuous Flow Ezee Dry Support Post Layout

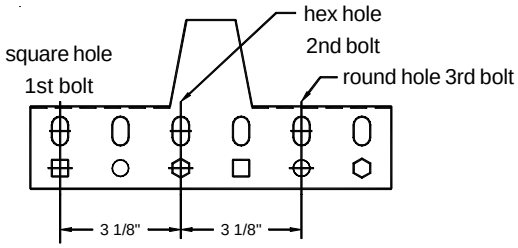


c

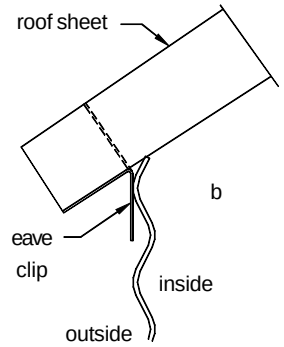
note: all dimensions shown on this page in inches

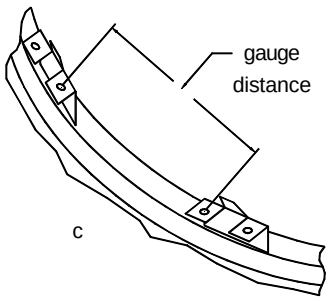
STEP 11

Roof Position: Eave clips allow the roof to be installed in an elevated or closed position. The elevated position can be used for drying purposes and the closed position for storage purposes. Decide which position best fits your grain handling requirements. Installing clips for the closed position, the slotted holes are used; and for roofs in the elevated position, the square, hex and round holes will be used. For roofs 18' diameter through 30' diameter, three (3) bolts will be used per eave clip at the positions in the clip as shown in fig a. See the specific bin size for eave clip spacing. Install all eave clips on the outside of the corrugated wall sheets (See Fig b.). Install clips in a counterclockwise direction around the bin.



a





18' DIAMETER ROOF

1. Since the manhole roof sheet is double the width of the regular roof sheets, decide where the roof manhole will be located and install the first eave clip as shown in figures a and b.

2. Skip nine (9) holes and install second clip starting with the first square hole in clip, as shown.

3. Skip three (3) holes and install third eave clip.

4. Repeat step 3 until all clips are installed.

NOTE: The same results can be obtained using a strap or angle gauge with 5/16" pins or 3/8" holes at 32 1/16" centers for the double wide manhole sheet and at 13 1/4" centers for the regular roof sheet. (See figure c)

21’ DIAMETER ROOF

1. Install the first eave clip starting with the first square hole in clip as shown in figures a and b.

2. Skip (4) holes and install second clip starting with the first square hole in clip, as shown.

3. Repeat step 2 until all clips are installed.

NOTE: The same results can be obtained using a strap or angle gauge with 5/16” pins or 3/8” holes at 16 1/4” centers. (See Figure c)

24’ DIAMETER ROOF

1. Install the first eave clip starting with the first square hole in clip as shown in figures a and b.

2. Skip five (5) holes and install second clip starting with the first square hole in clip, as shown.

3. Repeat step 2 until all clips are installed.

NOTE: The same results can be obtained using a strap or angle gauge with 5/16” pins or 3/8” holes at 19 1/2” centers. (See Figure c)

27’ DIAMETER ROOF

1. Install the first eave clip starting with the first square hole in clip as shown in figures a and b.

2. Skip six (6) holes and install second clip starting with the first square hole in clip, as shown.

3. Repeat step 2 until all clips are installed.

NOTE: The same results can be obtained using a strap or angle gauge with 5/16” pins or 3/8” holes at 22 9/16” centers. (See Figure c)

30’ DIAMETER ROOF

1. Install the first eave clip starting with the first square hole in clip as shown in figures a and b.

2. Skip seven (7) holes and install second clip starting with the first square hole in clip, as shown.

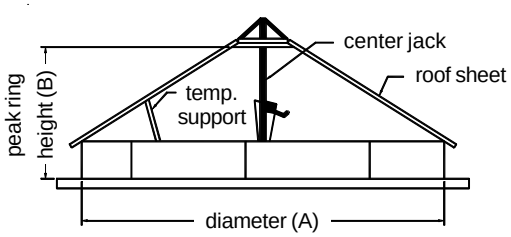
3. Repeat step 2 until all clips are installed.

NOTE: The same results can be obtained using a strap or angle gauge with 5/16” pins or 3/8” holes at 25 11/16” centers. (See figure c)

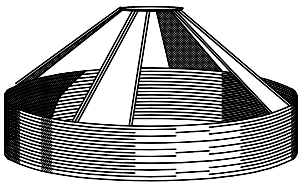
STEP 12

After the eave clips have been installed, support the peak ring on a stand at the approximate height shown in the chart below.

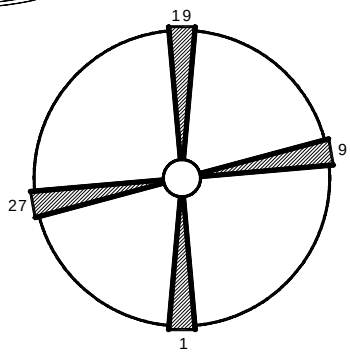
CHART 1	
Bin Diameter	**Hgt. Above Concrete**
18'	134 3/4"
21'	146 1/4"
24"	157 5/8"
27'	169 1/8"
30'	180 5/8"



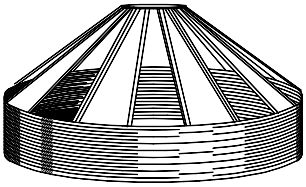
a



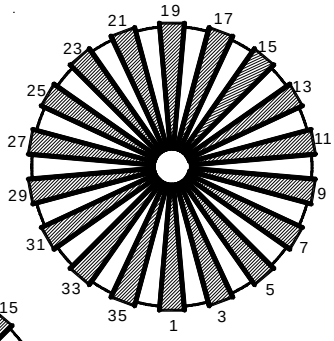
b



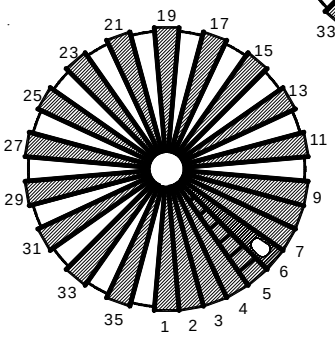
c



d



e



f

STEP 13

There are 36 roof sheets on each Ezee Dry bin. (The 18' bin has 34 standard sheets plus one double wide manhole sheet.) There are several methods to successfully complete the construction of the roof, but in order to maintain an even weight distribution on the peak ring we recommend the following procedure. Regardless of your paticular method the peak ring **MUST** be level and we strongly recommend the use of an adjustable center jack. Once the eave clips have been fastened to the sidewall, install the numbers 1, 9, 19, and 27 roof sheets. Use 5/16" x 1" bin bolts at both the peak ring and eave clips (fig b and c).

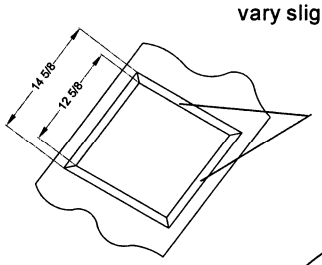
STEP 14

Install every other roof sheet, leaving one roof sheet space between each sheet installed (fig d and e).

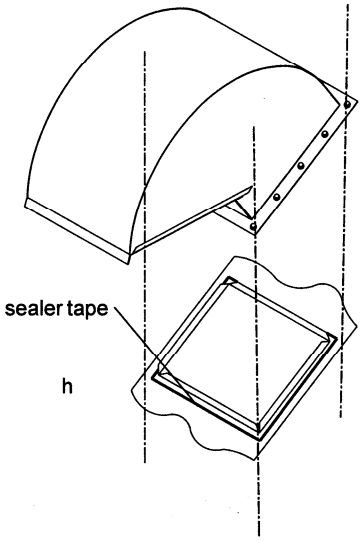
STEP 15, OPTION 1

If gooseneck vents are used, attach them to the appropriate sheets as shown (fig h) and fill in the remaining sheets using 5/16" bin bolts and flange nuts (fig. f page 34). Entrances for gooseneck vents are field cut (fig g). Be sure to leave out the top row of rib bolts as well as those illustrated in step 16.

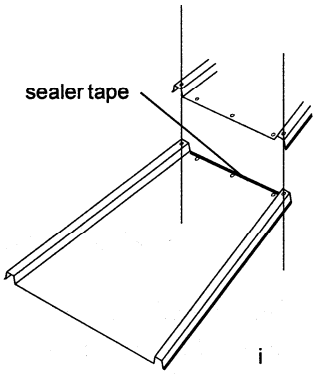
NOTE: the inside dimensions may vary slightly from those shown.



g



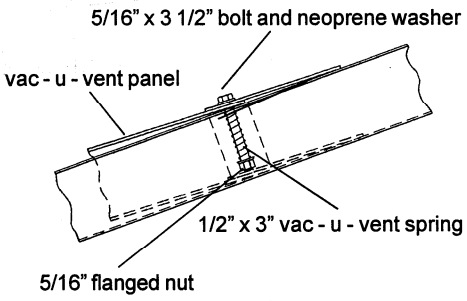
h



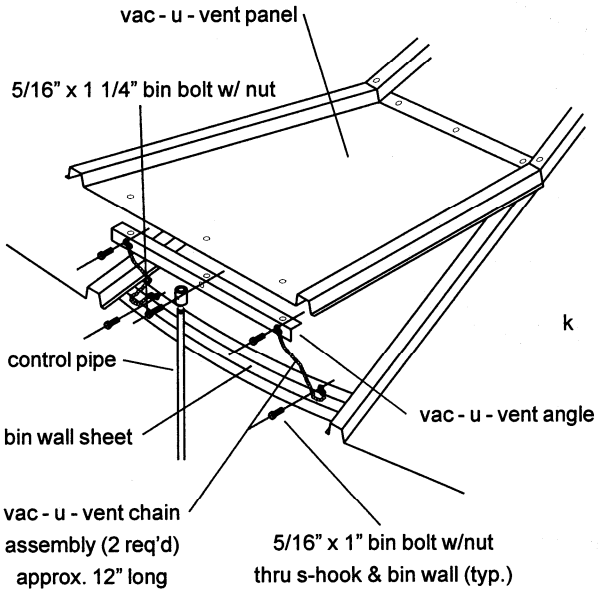
i

Vent Opening Sizes

Gooseneck	1.6 ft.²
18' Vacuvent	3.7 ft.²
21' Vacuvent	3.9 ft.²
24' Vacuvent	4.2 ft.²
27' Vacuvent	4.5 ft.²
30' Vacuvent	4.7 ft.²



j


vac - u - vent panel
5/16" x 1 1/4" bin bolt w/ nut
control pipe
bin wall sheet
vac - u - vent angle
vac - u - vent chain assembly (2 req'd) approx. 12" long
5/16" x 1" bin bolt w/nut thru s-hook & bin wall (typ.)

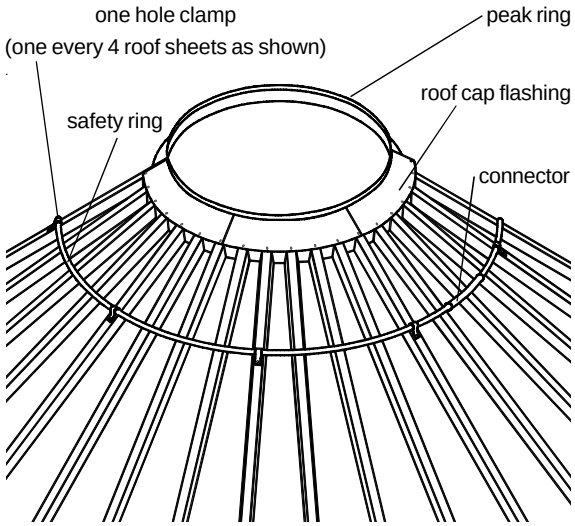
k

STEP 15, OPTION 2

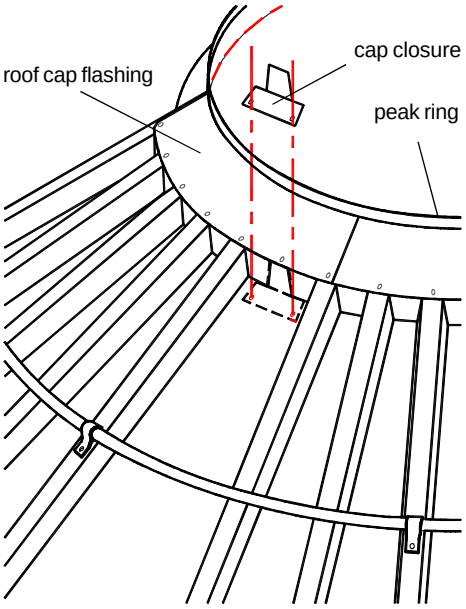
If Vac-U-Vents are used, first bolt the upper and lower sections together as shown, using a piece of sealer tape between the two pieces (fig i). The upper section must overlap the lower section. Bolt this assembly and all other sheets in the remaining roof spaces, leaving out the top row of rib bolts as well as those illustrated in step 16. At the ribs where Vac-U-Vents join, use a 5/16" x 3 1/2" bolt with a metal backed neoprene washer, a spring, and flange nut as shown (fig. j) Bolt the Vac-U-Vent angle to the lower sheet and the coupling to the angle. Secure the safety chain to both the sidewall sheet and Vac-U-Vent angle (fig. k).

STEP 16

In addition to the top row of rib bolts, leave out every fourth bolt from the second row of rib bolts. This will be used for the safety ring installation (fig. a). Fasten the (6) six roof cap flashing pieces. Leave out two bolts for the roof cap hold downs (see fig. f on page 37 for the location of the roof cap hold downs). The 18' roof requires that you fill in the space at the flashing due to the double wide manhole roof sheet (fig. b).



a



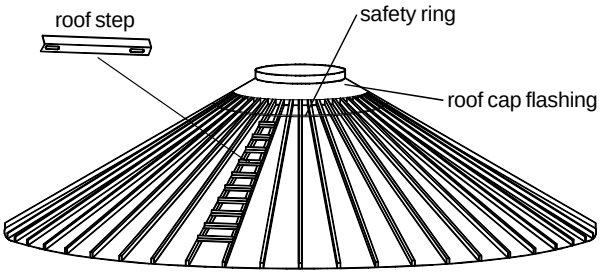
b

STEP 17

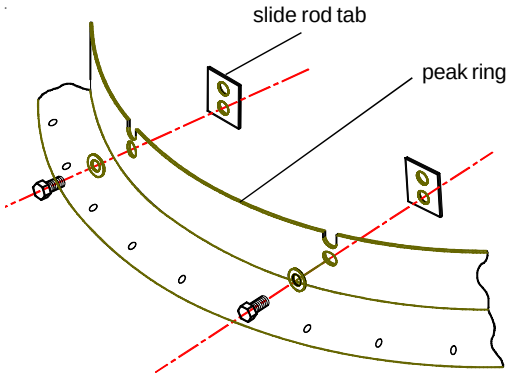
Attach the safety ring to the roof using the single hole clamps provided(fig a). A connector will join the two sections together.

STEP 18

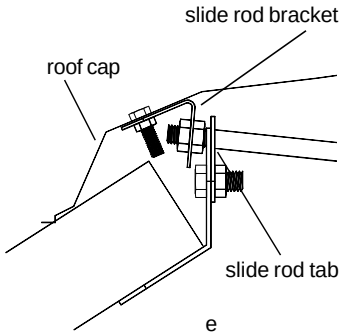
The roof steps should be installed as the sheets are being added when the desired location is reached (fig. c). See the roof step table on the next page. Normally, the manhole roof sheet would be to the right of the roof steps (fig. f page 34). However, the manhole cover, hinges, and latches can be assembled to open either right or left, permitting the manhole to be on the left of the steps if desired. Manhole cover assembly instructions are located on page 38.



c



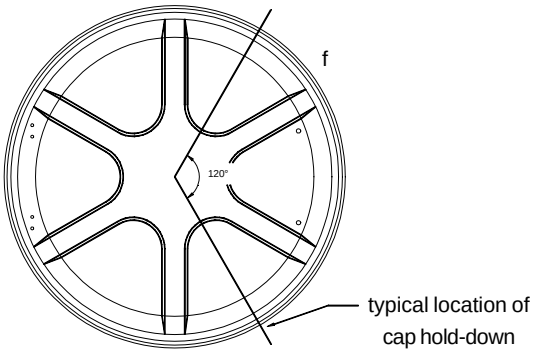
d

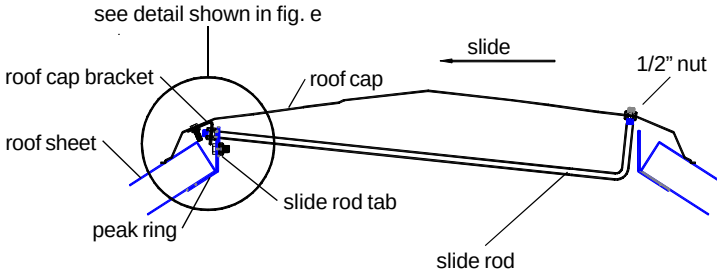


e

STEP 19

Bolt the roof cap slide rod brackets to the roof cap with 5/16” x 1” bin bolts and flange nuts (fig. e). Fasten the slide rod tab to the peak ring with 1/2” bolts (fig. d). Insert the slide rods through the upper holes in the tabs and thread a nut onto the rod (fig. g). Place the rod through the slide rod bracket and nut on that side also. Double nut the other end of the slide rod at the roof cap. Locate the roof cap hold-downs as shown (fig. f and h).

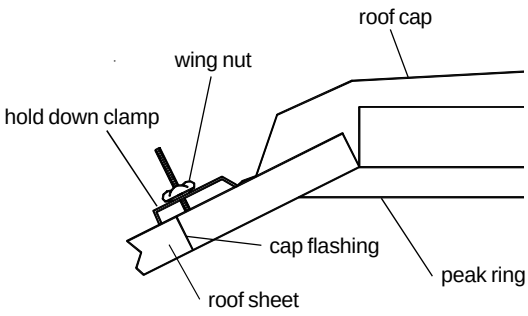




g

roof steps

part no.	overall length	18'	21'	24'	27'	30'
011484	11 3/4"	1	1	1	1	1
011486	15"	1	1	1	1	1
011488	18 1/8"	1	1	1	1	1
011490	21 1/8"	1	1	1	1	1
011492	24 3/8"		1	1	1	1
011494	27 1/2"			1	1	1
011496	30 1/2"				1	1
011498	33 3/4"					1



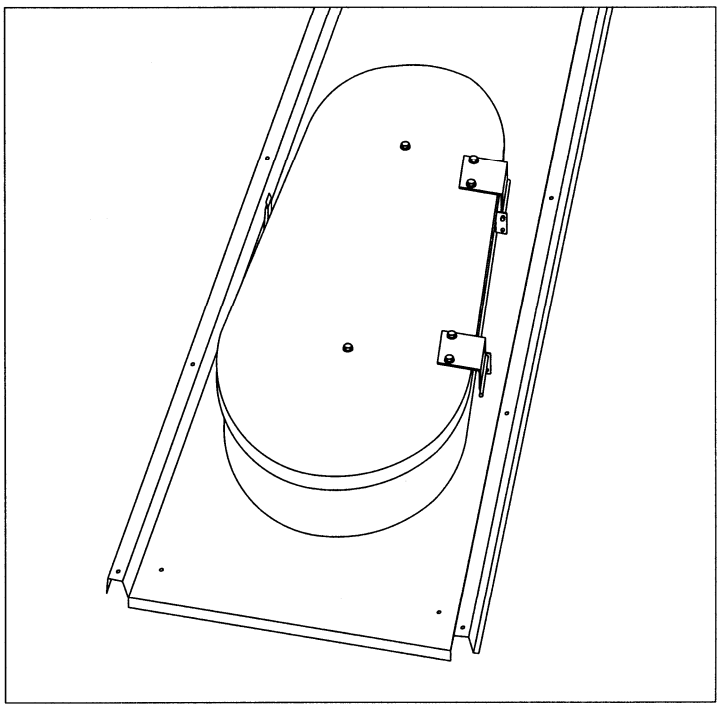
h

NOTE: The drawings on this page are for typical assembly, with the manway to the right of the roof steps. The location of hinges and latches may be reversed so that the manway may also be installed to the left of the roof steps.

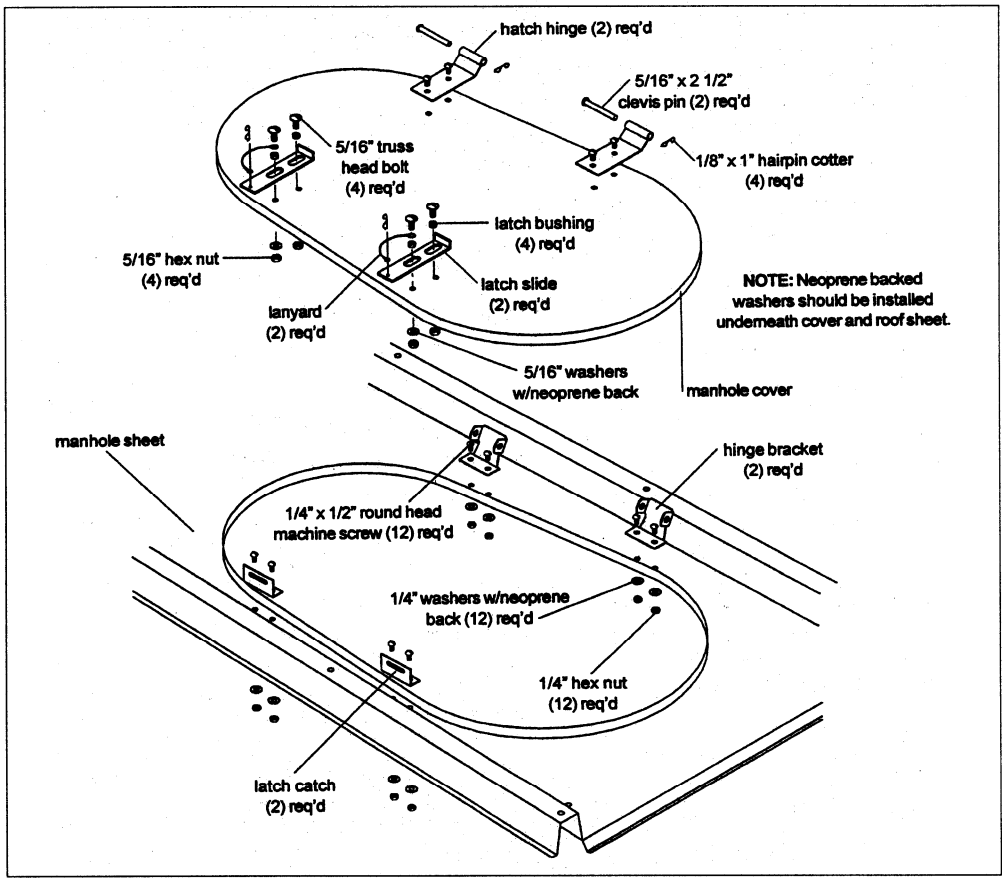
Special Note

note the proper manway installation

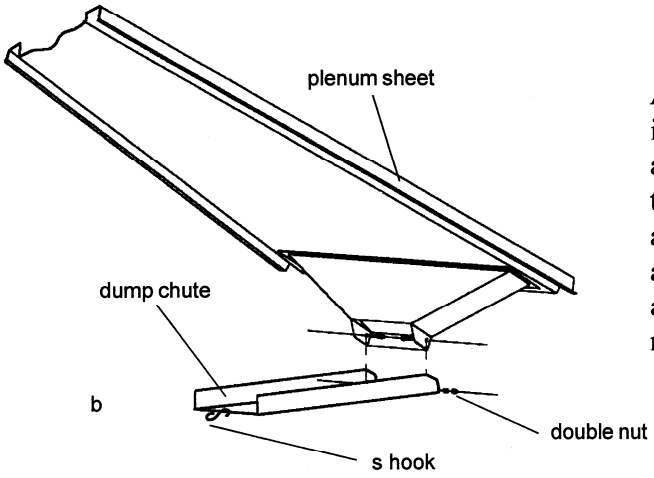
For 18', 21', and 24' diameter bins follow fig. b to install the manway. For 27' and 30' diameter bins fig. a illustrates the preassembled manway sheet to install.



(a) 27' AND 30' ROOF SHEET WITH MANWAY


hatch hinge (2) req'd
5/16" x 2 1/2" clevis pin (2) req'd
5/16" truss head bolt (4) req'd
1/8" x 1" hairpin cotter (4) req'd
latch bushing (4) req'd
5/16" hex nut (4) req'd
latch slide (2) req'd
lanyard (2) req'd
NOTE: Neoprene backed washers should be installed underneath cover and roof sheet.
5/16" washers w/neoprene back
manhole cover
manhole sheet
hinge bracket (2) req'd
1/4" x 1/2" round head machine screw (12) req'd
1/4" washers w/neoprene back (12) req'd
1/4" hex nut (12) req'd
latch catch (2) req'd

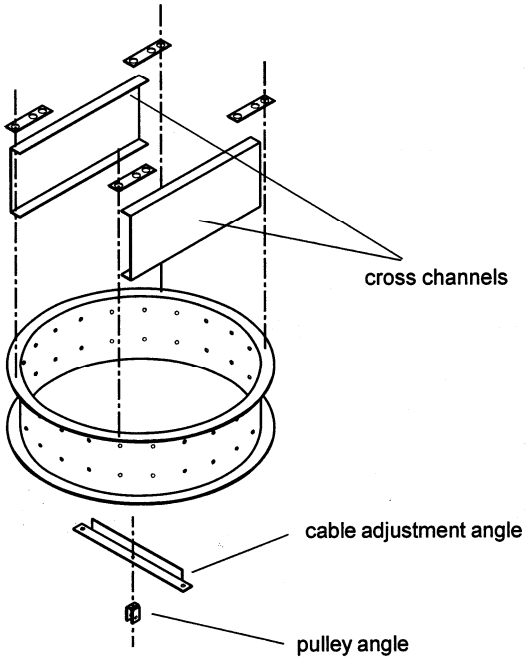
(b) 18', 21', AND 24' ROOF SHEET WITH MANWAY (EXPLODED VIEW OF MANWAY)



b

STEP 20

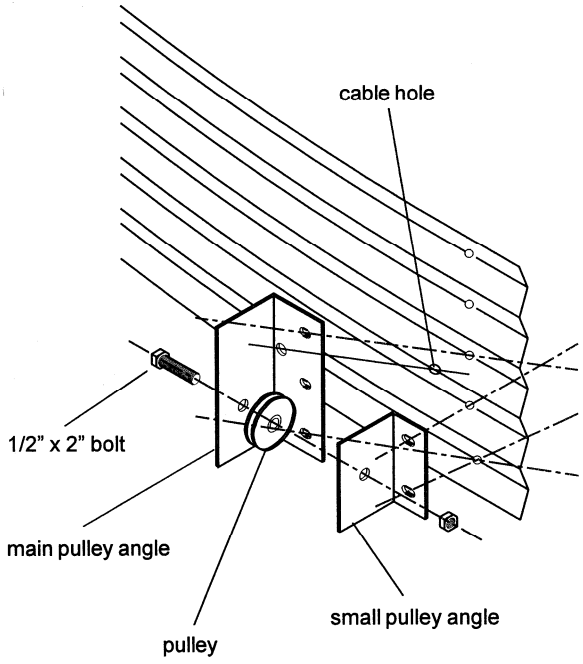
Attach the dump hopper chutes to lower and, if applicable, upper dump hopper necks using a 1/4" x 1" bolt on each side. Double nut the bolts making sure the chute swings up and down freely (fig. b). Fasten an "S" hook at the end of each chute and on the 30' units a 1/4" U-bolt in the two holes near the middle of the upper dump chutes.



c

STEP 21

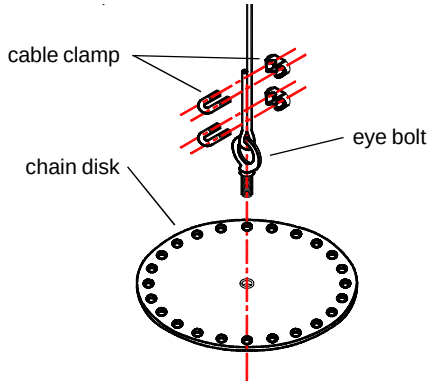
Fasten the cross channels to the center collar with the brackets provided. Install the cable adjustment angle to the cross channels. Bolt the pulley angle to the cable adjustment angle. Double nut this connection so that the pulley can swivel. Install the pulley between the angles using a 1/2" x 2" bolt (fig. c).



d

STEP 22

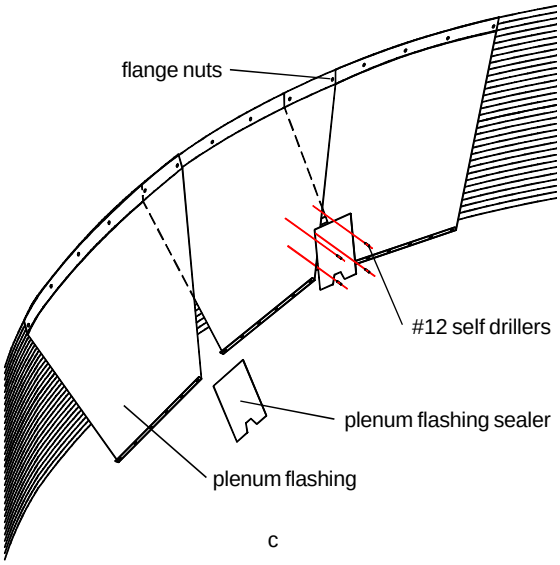
At the place where the winch (batch dryer) or hydraulic unit (continuous flow dryer) is to be located mount the outside pulley brackets to the sidewall. The pulley should be positioned such that the cable will run beneath a plenum rafter. Cut a hole through the sidewall where the 1/4" cable will run through (fig. d).



a

STEP 24

Fix the center chain disk at an elevation 12” beneath the center collar (fig. b). Install “S” hooks in each edge hole of the disk. Take the twin loop chain and cut it into equal lengths based on the chain length chart. Install two lengths of chain 180° apart, from the “S” hooks in the center disk to the outer dump chutes. Adjust the chains until the dump chutes are level (fig. b). Continue around the bin installing chain pairs in a similar manner so that the center disk remains level. On the 30’ batch unit connect the shorter chain length from the center chain disk to the upper dump chute. Use the same “S” hook in the center chain disk as was used for the lower dump chute.



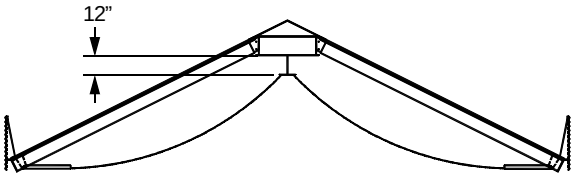
c

STEP 23

Attach the 3/8” x 1 1/4” eye bolt to the center of the chain disk (fig. a). Pass the 1/4” cable through the eye bolt and secure it with two cable clamps. Thread the free cable end through the center pulley, the bin sidewall and outer pulley. This end will attatch to the winch or hydraulic cylinder.

chain length chart

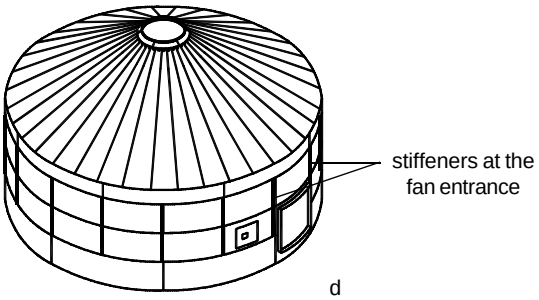
dryer	pieces	length
18' batch/cont. flow	18	80"
21' batch/cont. flow	21	102"
24' batch/cont. flow	24	122"
27' batch/cont. flow	27	142"
30' batch	30 10	164" 108"
30' continuous flow	30	164"



b

STEP 25

Install the grain bands according to the appropriate layout on page 31. Attach the perforated band at the inner ring to the roof using the (6) clips provided. Holes will need to be field drilled for these clips. At this time also fasten the plenum flashing to the sidewall by using flange nuts over the bin bolts. Place the flashing sealer pieces over the plenum sheet ribs and fasten them to the flashing with #12 sheet metal screws (fig. c).



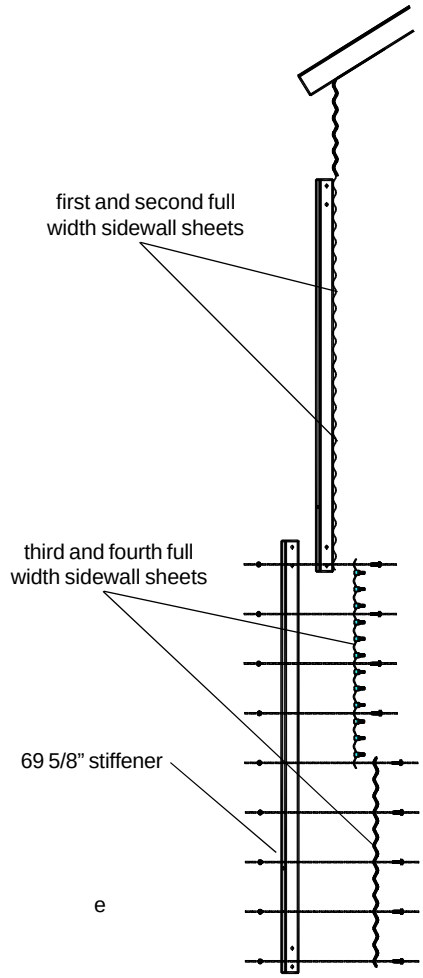
d

STEP 26

Raise the bin and add the third full sidewall ring. The outside ladder needs to be assembled as the bin is being raised. Refer to pages 50-53 for ladder instructions. At this time bolt the fan entrance frame(s) into the opening(s). **The wide portion of the frame should go toward the bottom.** Field drill the holes for the tension ring in the fan entrance header. Also install the stiffeners on either side of the fan entrance frame at this time as well (fig. d)

STEP 27

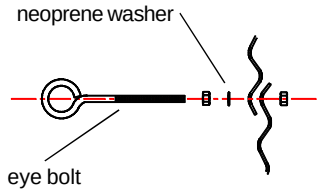
Raise the tank and add the fourth ring of sidewall sheets. Install another set of intermediate stiffeners beneath the first set previously installed. The top of the lower stiffeners will splice with the upper by nesting inside of it (fig. e).



e

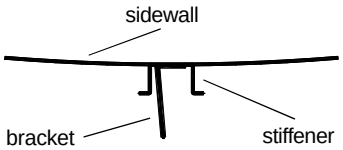
STEP 28

If your bin is equipped with Vac-U-Vents insert the upper control pipe section into the coupling bolted to the angle on the lower Vac-U-Vent sheet. Install eye bolts at the bottom of the first and third full sidewall rings (fig. f). These eye bolts act as guides for the control pipes. As the bin is being built add control pipes as shown in the chart below.

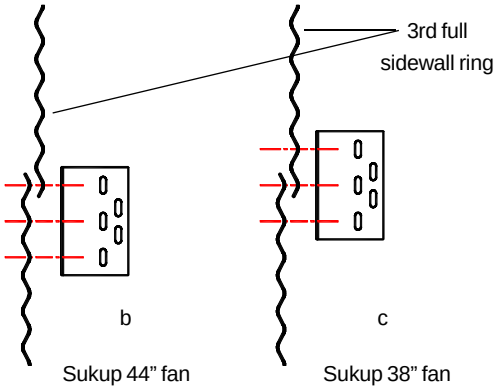


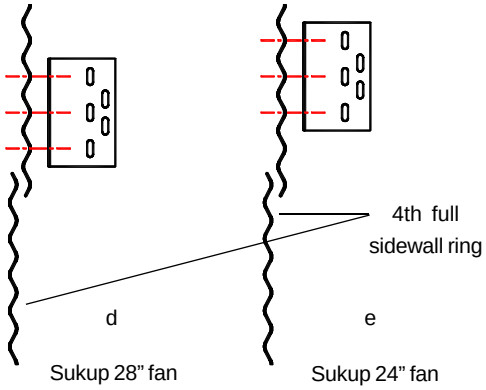
f

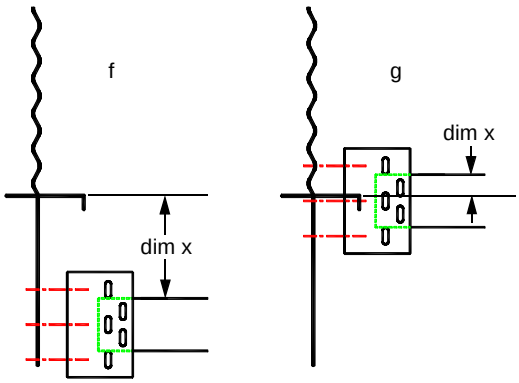
bin height	eye bolt placement from top of bin	number of eye bolts	length of pipe
7 1/2 R 19'-9"	bottom of 1st & 3rd full ring	2	3 @ 63"
8 1/2 R 22'-5"	bottom of 1st, 3rd & 5th full ring	3	3 @ 63" / 1 @ 31"
9 1/2 R 25'-1"	bottom of 1st, 3rd & 5th full ring	3	4 @ 63"
10 1/2 R 27'-9"	bottom of 1st, 3rd, 5th, & 7th full ring	4	4 @ 63" / 1 @ 31"
11 1/2 R 30'-5"	bottom of 1st, 3rd, 5th, 7th, & 9th full ring	5	5 @ 63"



a







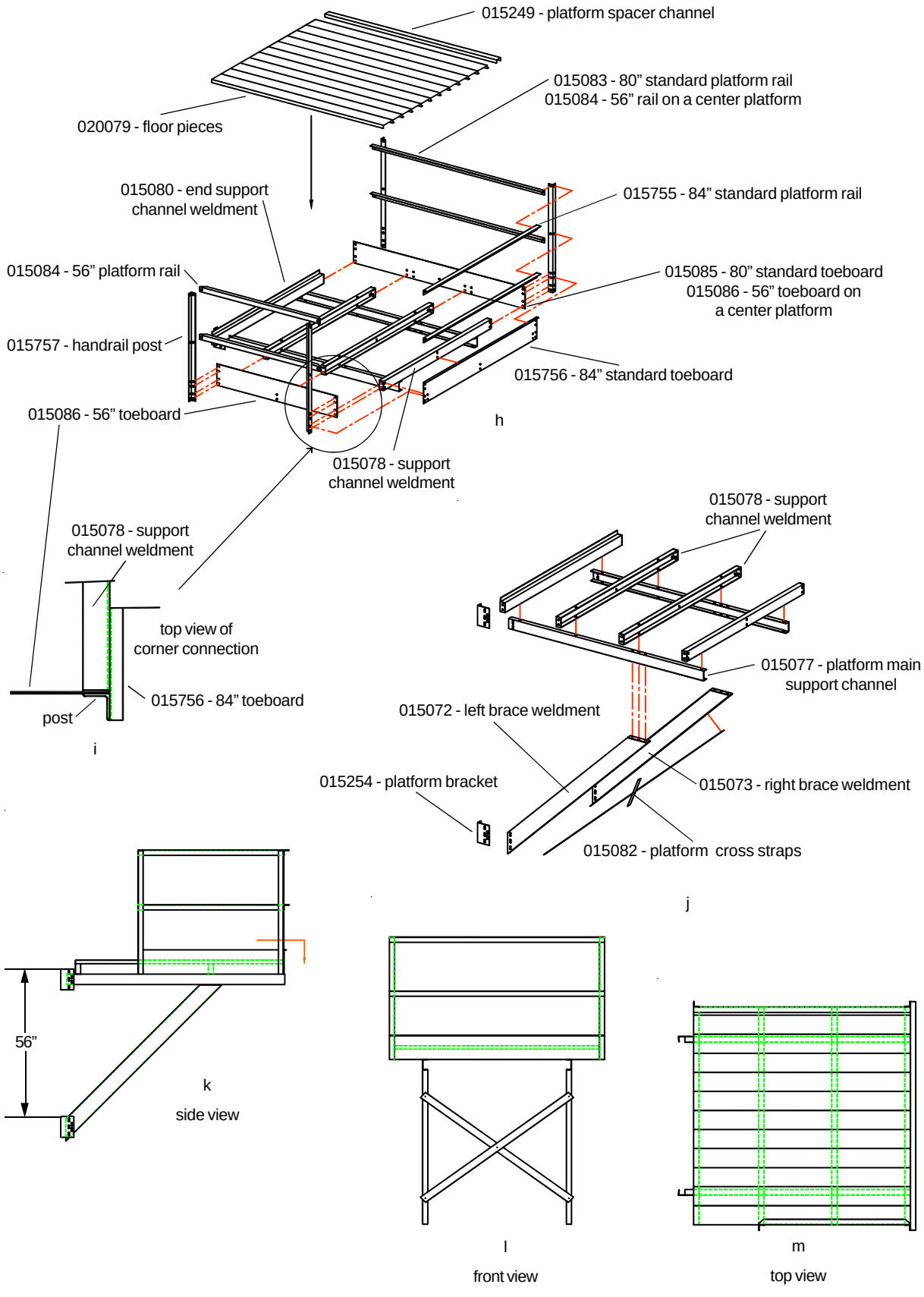
STEP 29

Refer to the system layout drawing on page 23 for the platform location. Bolt the upper fan platform bracket inside the stiffeners at each side of the fan entrance frame (fig. a). The vertical location should correspond to the size of fan used (fig.s b-e). If your unit has two fans, assemble both of them at the same time.

STEP 30

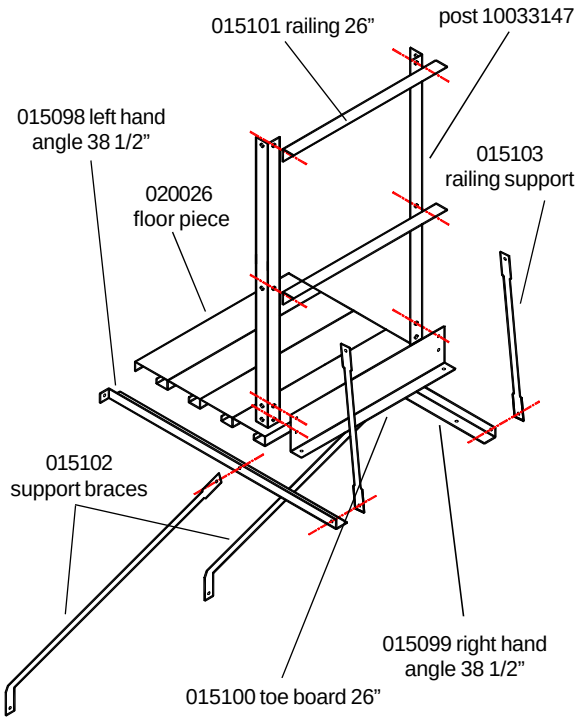
Assemble the door and step across platform (if required) as shown on page 44. Raise the bin and install the next two sidewall rings and next set of stiffeners. Attach the lower fan platform bracket 56" below the upper (fig. k, page 43). Fasten the main support channels, the knee braces and the cross braces as shown in fig. j. All connections use 3/8" x 1" bolts. The main support channel should be at a height based on the chart below. If a different model or brand is used, measure from its support leg to the center of the outlet and adjust the dimensions accordingly. Assemble the remainder of the platform as shown in figures h through m on the following page. The fan and heater unit may be set on the platform and bolted to the entrance adapter at this time.

Sukup Fan	Outlet Height	dim x	figure
24"	16 1/2"	2 1/4"	g
28"	18 1/4"	1/2"	g
38"	23 5/8"	4 7/8"	f
44"	28 3/4"	10"	f


015249 - platform spacer channel
020079 - floor pieces
015083 - 80” standard platform rail
015084 - 56” rail on a center platform
015080 - end support channel weldment
015755 - 84” standard platform rail
015084 - 56” platform rail
015085 - 80” standard toeboard
015086 - 56” toeboard on a center platform
015757 - handrail post
015756 - 84” standard toeboard
015086 - 56” toeboard
h
015078 - support channel weldment
015078 - support channel weldment
015078 - support channel weldment
top view of corner connection
015077 - platform main support channel
015756 - 84” toeboard
post
i
015072 - left brace weldment
015254 - platform bracket
015073 - right brace weldment
015082 - platform cross straps
j
56”
k
side view
l
front view
m
top view

STEP 31

The door platform will be positioned between the ladder and the fan platform. Locate the support angles and braces such that the floor level will approximate that of the fan platform. Some drilling of the sidewall sheets may be required. Use 5/16” x 1” bin bolts and nuts for all the door platform construction (fig. a).

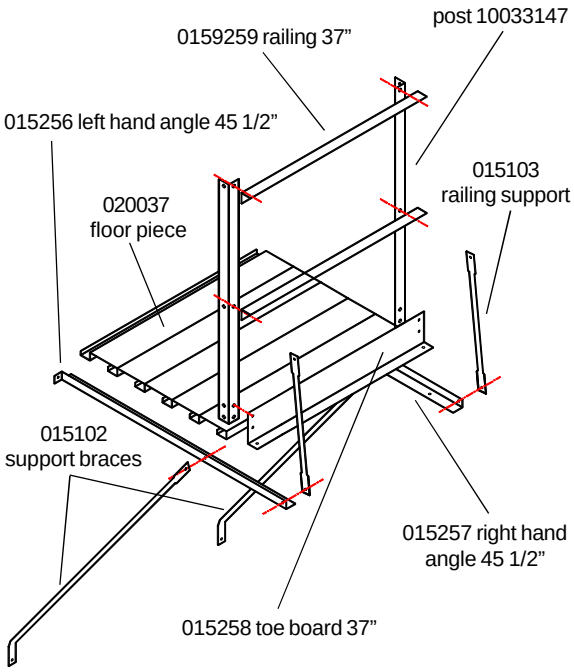


step accross platform

b

STEP 33

Continue to raise the bin using the proper gage of sidewall sheet as given in the chart on pages 48 and 49. For every two rings that are added a set of stiffeners will need to be installed. On odd ring bins a 1 ring stiffener is supplied for the bottom. In addition, continue adding the ladder and Vac-U-Vent control pipes if included on your specific bin.

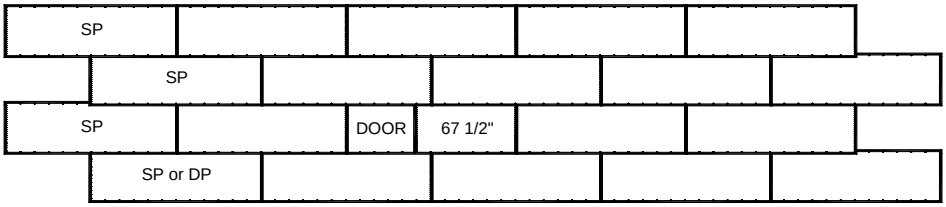


door platform

a

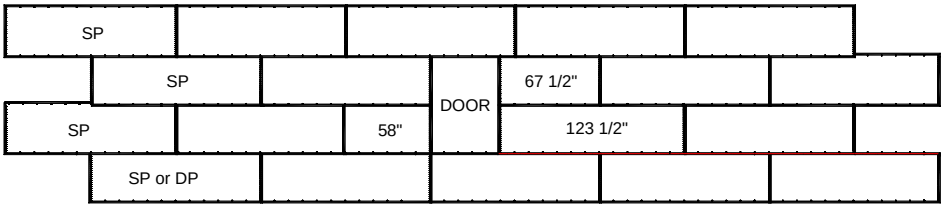
STEP 32 (2 fan units only)

The step across platform will be positioned between the two fan platforms. Locate the support angles and braces such that the floor level will approximate that of the fan platforms. Some drilling of the sidewall sheets may be required. Use 5/16” x 1” bin bolts and nuts for the all the step across platform construction (fig b).



c

32” door in a single punched ring

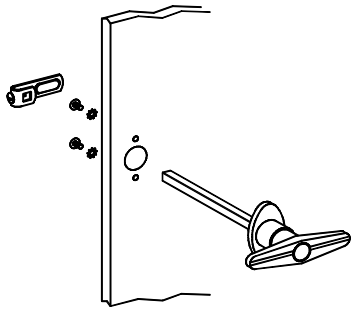


d

64” door in a single punched ring

STEP 34

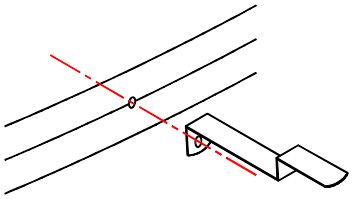
The access doors to the bin are located in the second ring from the bottom (32” door) or in the second and third rings from the bottom (64” door). Special sheets are provided to accommodate the door frames (fig. c & d). These sheets will need to be field drilled for the stiffeners.



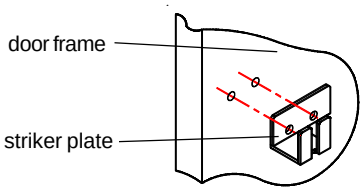
e

STEP 35

Insert the appropriate door frame (32” or 64”) into the opening created by the special length sheets. Use sealer tape on all four sides of the opening. Attach the cover to the frame at the hinges and install the lock assembly (fig. e). Bolt the outer door clip to the side wall on the hinge side to keep the door cover fixed in position when open (fig. f). Fasten the striker plate to the door jamb (fig. g). Adjust the cam so that the door will close tightly. Use this same procedure to install the lock in the upper access door.



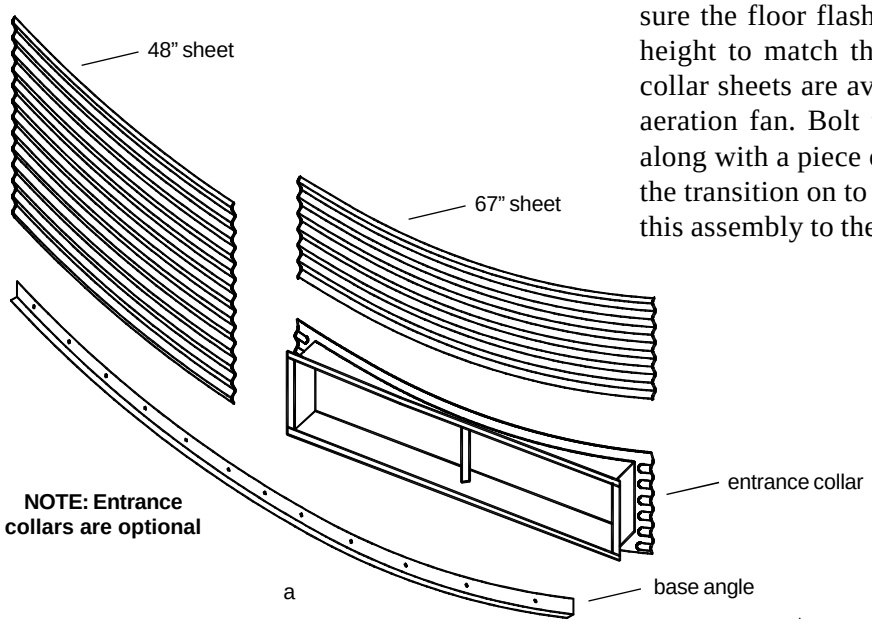
f



g

STEP 36

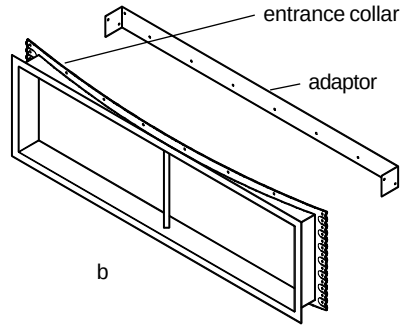
Install the bottom ring of sidewall sheets, making sure the floor flashing holes are at the proper height to match the floor supports. Entrance collar sheets are available as an option for the aeration fan. Bolt these three sheets together along with a piece of base angle (fig a). Install the transition on to the entrance collar and bolt this assembly to the bottom sidewall ring.



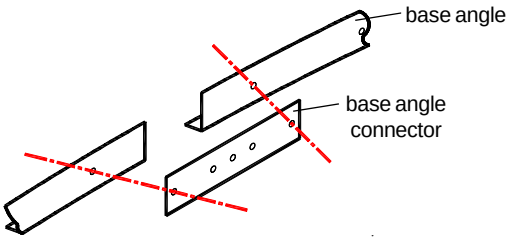
a

STEP 37

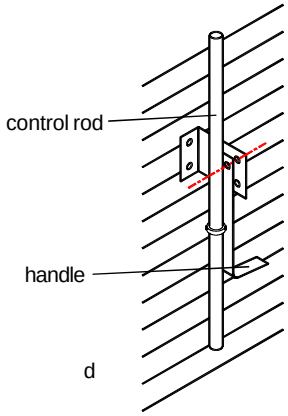
If 13" floor supports are used field drill the holes in the entrance collar for the adaptor. The adaptor should fit flush on the inside and at the top. Adaptor holes will be toward the bottom (fig b).



b



c



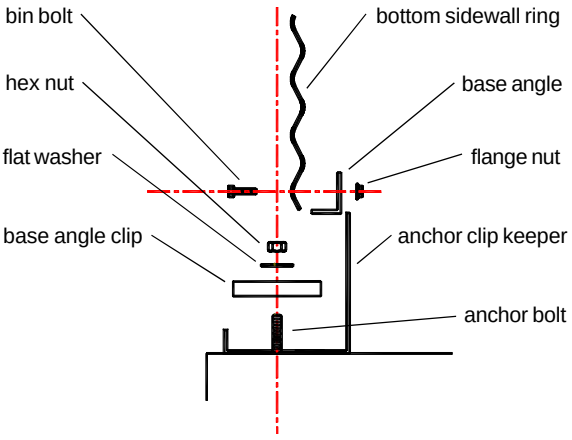
d

STEP 38

Install the remaining pieces of base angle to the bottom ring using the base angle connectors (fig. c). All the hardware for the base should be packaged separately.

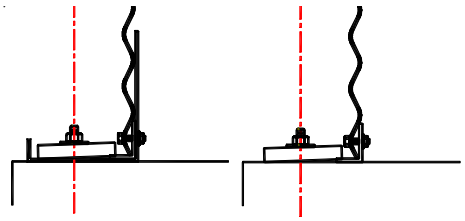
STEP 39 (Vac-U-Vents only)

Locate handle mounting bracket about 48" from the ground. Drill (2) 3/8" diameter holes to match the bracket. Slide control rod through the set collar on the handle then bolt the handle bracket to the sidewall. With the Vac-U-Vent fully closed and the handle in the down position, tighten the bolt in the set collar.



e

base connection at vertical seam



f

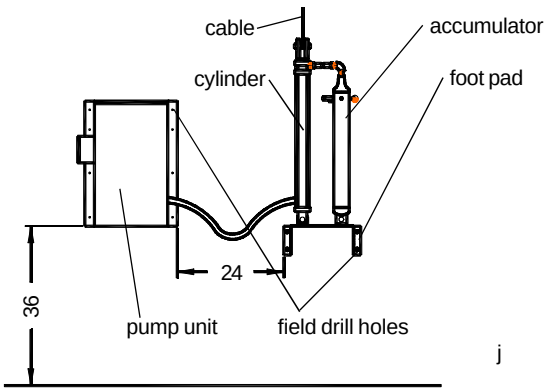
base connection at vertical seem assembled

g

base connection at all other locations

STEP 40

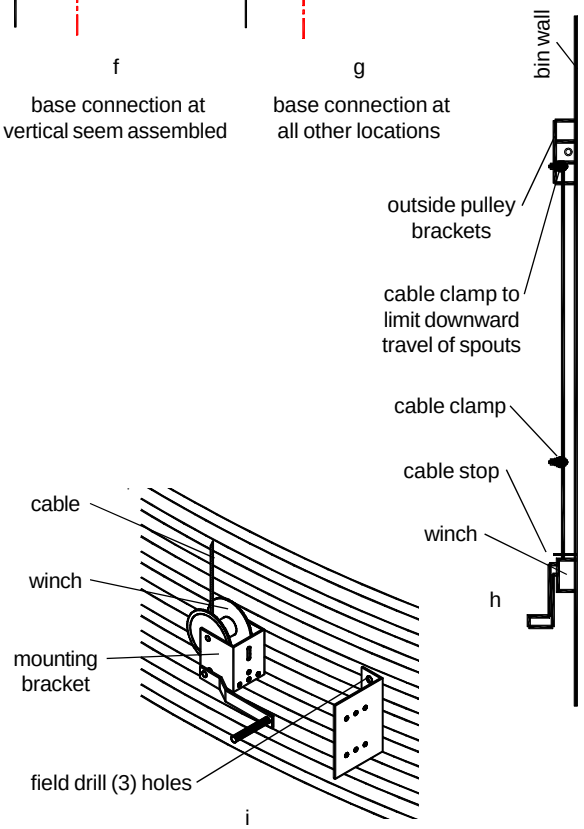
Install the anchor clip keeper at the vertical seams of the bottom sidewall ring. The bottom leg of the keeper will fit below the base angle (fig. e and f). While the bin is still suspended apply the base sealer to the bottom of the base angle. Lower the bin so that it is inside of the anchor bolt circle. Be sure that any anchor bolts below the transition are cut off prior to lowering the bin. Secure the bin to the foundation with the base angle clips as shown (fig. g).



j

STEP 41 (continuous flow units/ automatic batch units)

Install the hydraulic pump unit along with the cylinder/accumulator assembly as shown in figure j. Trim the cable and attach it to the cylinder using two cable clamps. Connect the hose between the pump unit and the cylinder. Field drill all holes.



i

STEP 41 (batch units only)

Install the winch bracket and winch approximately 48” above the concrete as shown in figure i. Trim the cable as required and attach it to the winch. The travel of the cable must be limited to prevent damage to the dump hoppers. After insuring that all dump chutes are level, attach a cable clamp to the cable as close to the winch drum as possible. This clamp acts as a visual indicator of when to stop raising the dump chutes. Release the cable from the winch until this clamp is approximately 30” above the winch drum and attach a second cable clamp to the cable beneath the outer pulley bracket near the top of the bin sidewall (fig. h). This clamp prevents over-opening of the dump chutes. Make sure that the chains are tight before the chutes interfere with the hopper neck when in the lowered position.

Ring	Color Code	18' Ezee Dry Sidewall Gages		
		9 1/2 Rings	8 1/2 Rings	7 1/2 Rings
		25'-1"	22'-5"	19'-9"
1/2	Green/Gray	19	19	19
1	Green/Gray	19	19	19
2	Green/Gray	19	19	19
3	Green/Gray	19	19	19
4	Red	17	17	17
5	Red	17	17	17
6	Red	17	17	17
7	Red	17	17	17
8	Blue/Yellow	15	15	
9	Blue/Yellow	15		

Ring	Color Code	21' Ezee Dry Sidewall Gages		
		9 1/2 Rings	8 1/2 Rings	7 1/2 Rings
		25'-1"	22'-5"	19'-9"
1/2	Green/Gray	19	19	19
1	Green/Gray	19	19	19
2	Green/Gray	19	19	19
3	Green/Gray	19	19	19
4	Red	17	17	17
5	Red	17	17	17
6	Red	17	17	17
7	Red	17	17	17
8	Blue/Yellow	15	15	
9	Blue/Yellow	15		

Ring	Color Code	24' Ezee Dry Sidewall Gages				
		11 1/2 Rings	10 1/2 Rings	9 1/2 Rings	8 1/2 Rings	7 1/2 Rings
		30'-5"	27'-9"	25'-1"	22'-5"	19'-9"
1/2	Green/Gray	19	19	19	19	19
1	Green/Gray	19	19	19	19	19
2	Green/Gray	19	19	19	19	19
3	Red	17	17	17	17	17
4	Red	17	17	17	17	17
5	Red	17	17	17	17	17
6	Red	17	17	17	17	17
7	Red	17	17	17	17	17
8	Blue/Yellow	15	15	15	15	
9	Yellow	14	14	14		
10	Yellow	14	14			
11	Yellow/Black	13				

	27' Ezee Dry Sidewall Gages					
Ring	Color Code	11 1/2 Rings	10 1/2 Rings	9 1/2 Rings	8 1/2 Rings	7 1/2 Rings
		30'-5"	27'-9"	25'-1"	22'-5"	19'-9"
1/2	Green/Gray	19	19	19	19	19
1	Green/Gray	19	19	19	19	19
2	Green/Gray	19	19	19	19	19
3	Red	17	17	17	17	17
4	Red	17	17	17	17	17
5	Red	17	17	17	17	17
6	Red	17	17	17	17	17
7	Blue/Yellow	15	15	15	15	15
8	Yellow	14	14	14	14	
9	Yellow	14	14	14		
10	Yellow/Black	13	13			
11	Black	12				

	30' Ezee Dry Sidewall Gages					
Ring	Color Code	11 1/2 Rings	10 1/2 Rings	9 1/2 Rings	8 1/2 Rings	7 1/2 Rings
		30'-5"	27'-9"	25'-1"	22'-5"	19'-9"
1/2	Green/Gray	19	19	19	19	19
1	Green/Gray	19	19	19	19	19
2	Green/Gray	19	19	19	19	19
3	Red	17	17	17	17	17
4	Red	17	17	17	17	17
5	Red	17	17	17	17	17
6	Red	17	17	17	17	17
7	Blue/Yellow	15	15	15	15	15
8	Yellow	14	14	14	14	
9	Yellow	14	14	14		
10	Yellow/Black	13	13			
11	Black	12				

Ladders

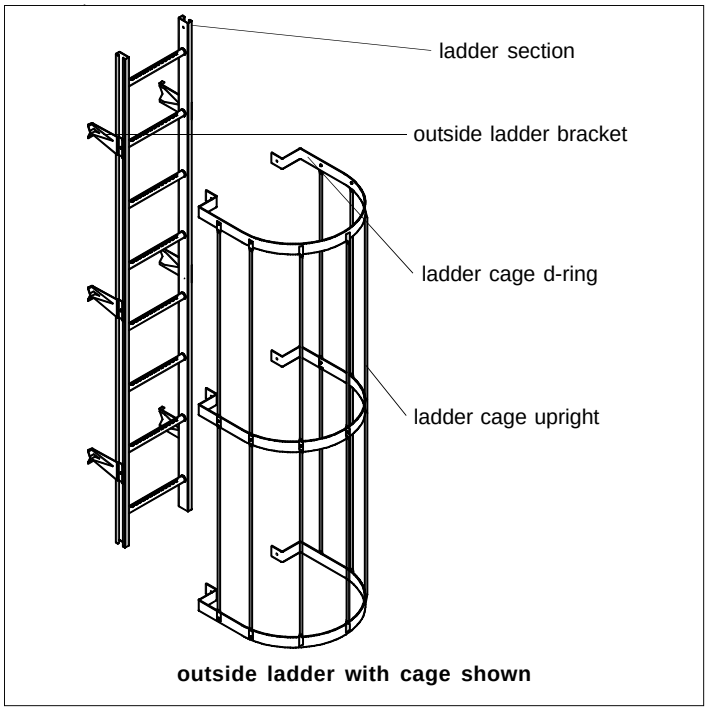
42

ladder installation

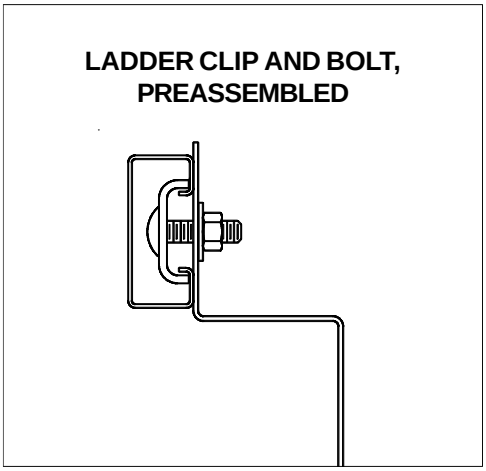
50

Preread the entire ladders section (pages 50 - 53) before installing the ladders. Refer to the ladders, safety cages and platforms manual for specific assembly instructions. Attach the ladder to the bin sidewall while building the bin from top to bottom (fig.s a - g). The first ladder bracket should be located about 8" below the eave (fig. e). Field drill this connection. Thereafter brackets are designed to be located at every horizontal seam. Be sure that all the brackets and splices are properly spaced and **securely tighten all bolts**. Use bin bolts and nuts for the assembly. Fasten the safety cage to the ladder using the clip and bolt assemblies provided.

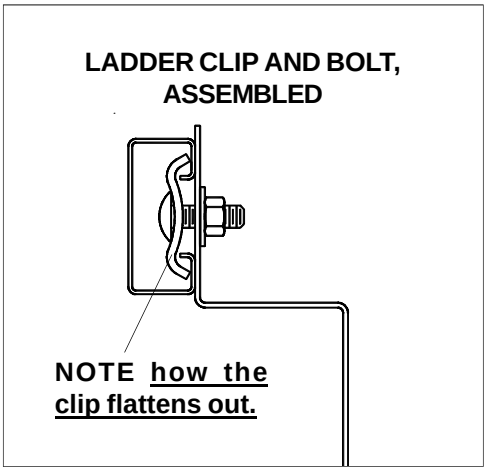
NOTE: OSHA Regulation - Subpart D., Section 1910.27 (d) (iv) states in par: "Cages shall extend down the ladder to a point not less than seven (7') feet nor more than eight (8') feet above the base of the ladder."



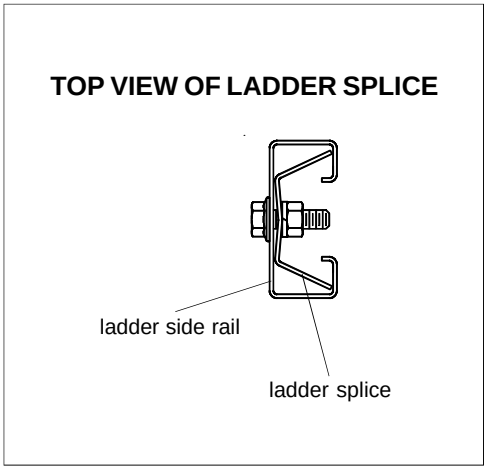
b OUTSIDE LADDER WITH CAGE ASSEMBLY



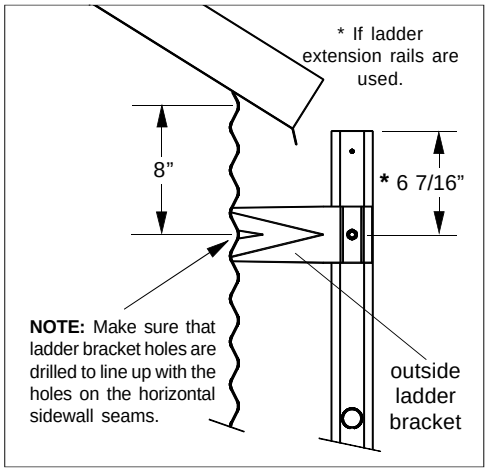
a TOP VIEW OF LADDER CLIP AND BOLT



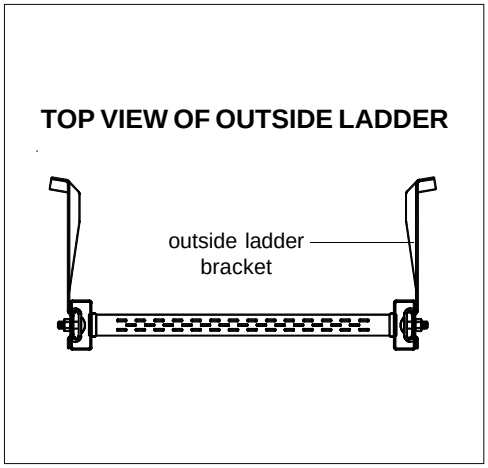
c TOP VIEW OF LADDER CLIP AND BOLT



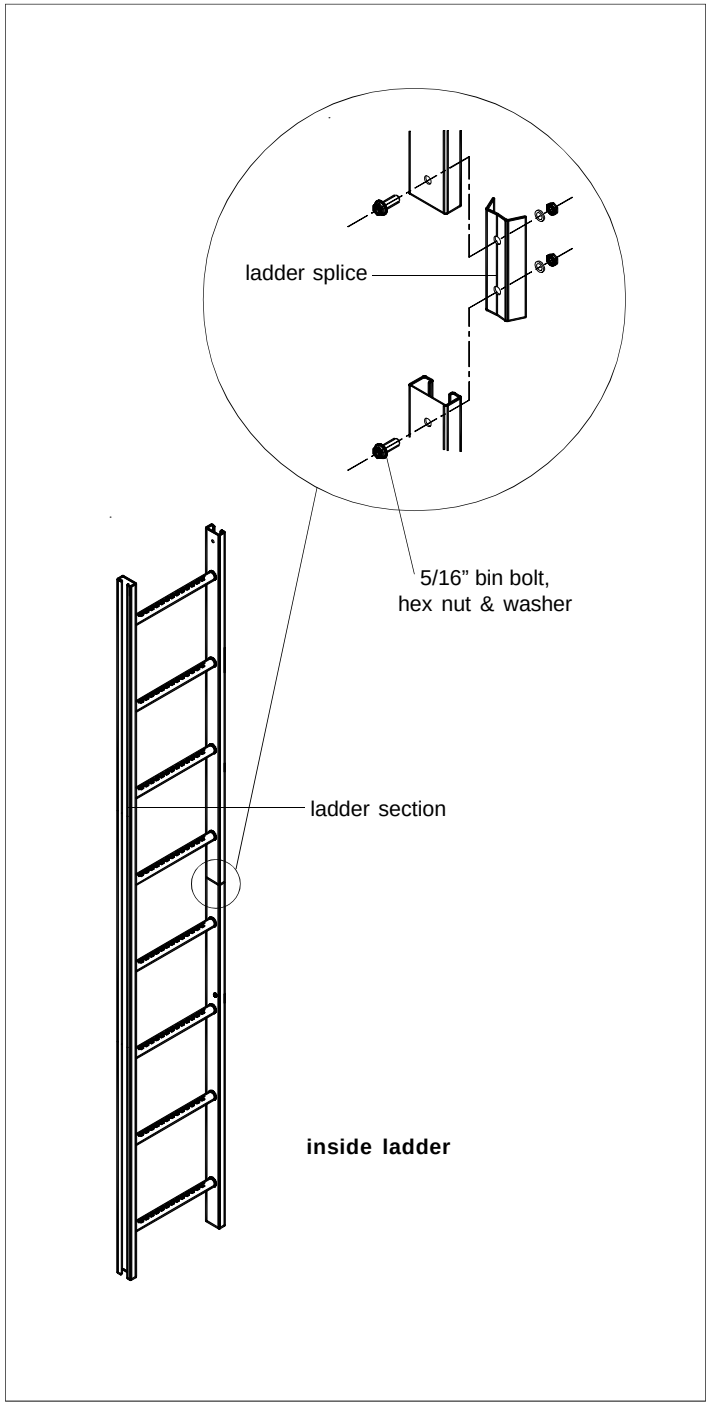
d **TOP VIEW OF LADDER SPLICE**


* If ladder extension rails are used.
8”
* 6 7/16”
NOTE: Make sure that ladder bracket holes are drilled to line up with the holes on the horizontal sidewall seams.
outside ladder bracket

e **LOCATE THE FIRST LADDER BRACKET**



f **TOP VIEW OF THE OUTSIDE LADDER**



g **INSIDE LADDER ASSEMBLY**

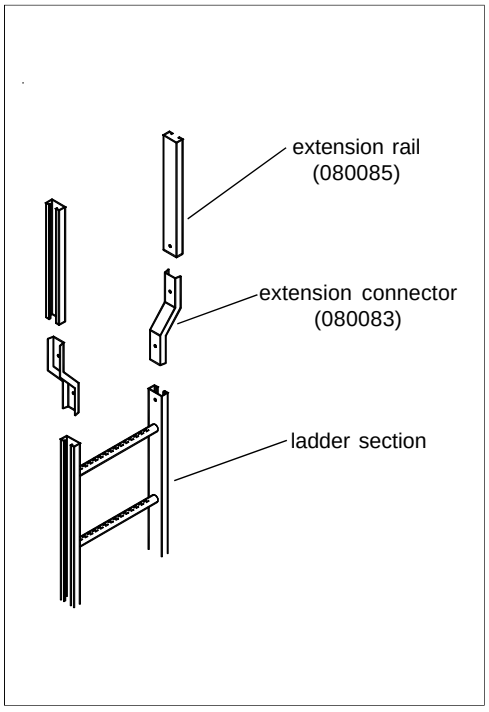
NOTE: Make sure that the tread on the rungs are facing toward the top of the ladder.

43

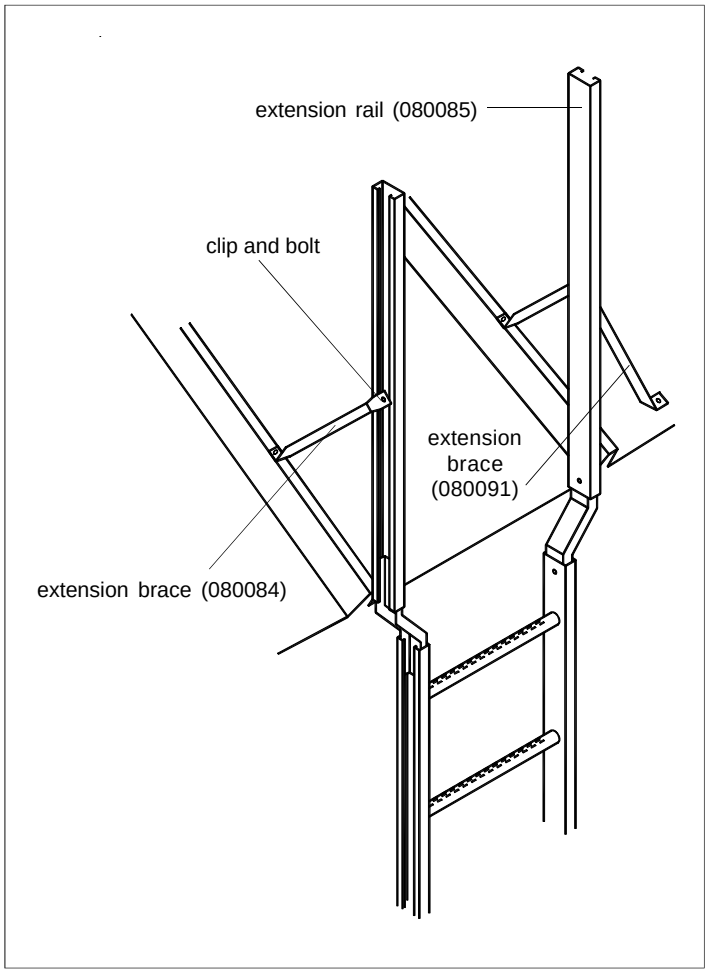
installing ladder extension rails

Extension rails are provided as an option for means to walk “through” the ladder on to the roof steps. The extensions are connected to the ladder section below using the connectors provided and 5/16” bin bolts and nuts. Stabilize the rails to the roof using the braces. The roof will need to be field drilled. Use the ladder clip and bolts to attach the braces to the extension rail.

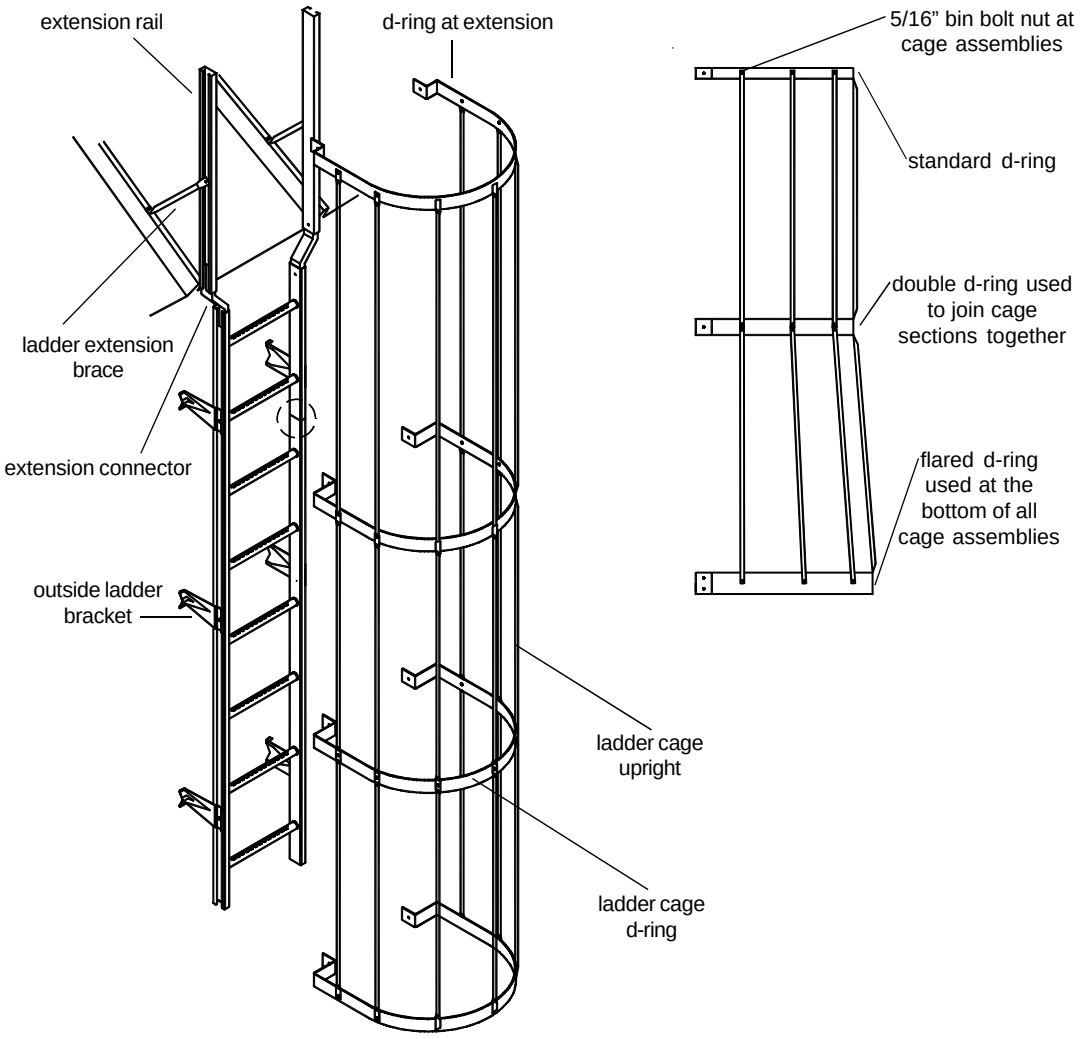
NOTE: The walk-thru ladder extension and safety cage shown here in the ladders section of the manual are available as options.



a **LADDER RAIL EXTENSIONS**



b **LADDER RAIL EXTENSIONS**


extension rail
d-ring at extension
ladder extension brace
extension connector
outside ladder bracket
ladder cage upright
ladder cage d-ring
5/16” bin bolt nut at cage assemblies
standard d-ring
double d-ring used to join cage sections together
flared d-ring used at the bottom of all cage assemblies

C **LADDER RAIL EXTENSIONS**

44

install the aeration fan and floor

Install the lower aeration fan and transition. Install the floor and floor supports per the instructions provided with the floor.

54

45

install the control and all wiring

Install the dryer control per the instructions provided with the control unit. Wire and plumb the fans and other electrical and heat devices according to the instructions provided by the manufacturer. MFS/YORK/STORMOR strongly suggests that all wiring and gas plumbing be done by a qualified electrician familiar with this type of equipment.

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install the control and all wiring

READ AND UNDERSTAND YOUR OPERATIONS MANUAL PRIOR TO ATTEMPTING TO USE THE EZEE DRY BIN. FOLLOW THE SAFETY ADVISORY INFORMATION GIVEN IN ALL AREAS OF THE ASSEMBLY AND OPERATORS MANUALS. Contact MFS/YORK/STORMOR engineering department with ANY questions at (308) 384 - 9320.

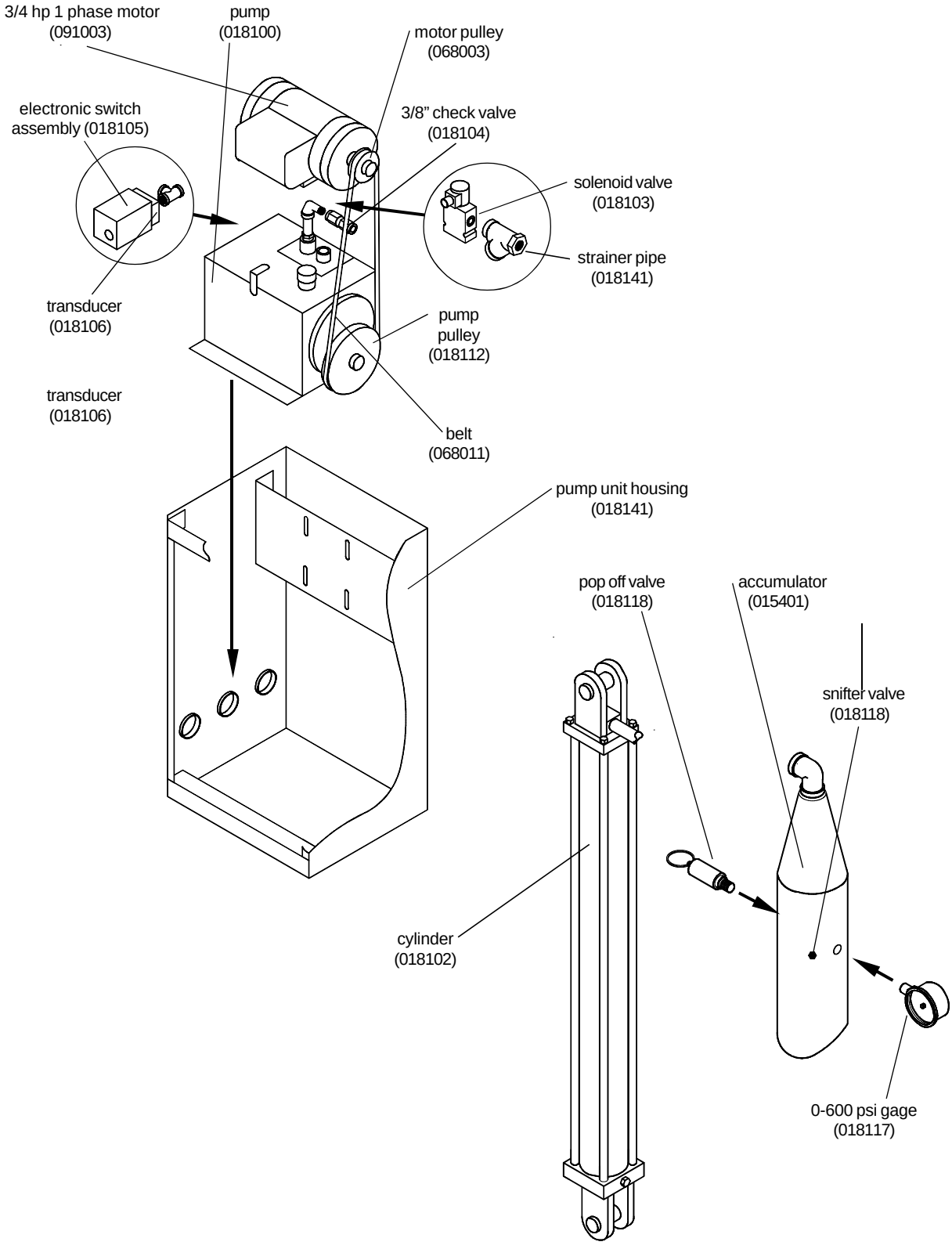
Operation

Prior to filing your new bin for the first time, you should check the following:

1. All bolts are in place and properly tightened.
2. All ladders, handrails, stairways are securely in place.
3. The bin has been properly anchored to the foundation.
4. Unloading equipment operates freely and all control gates are operable.
5. The inner door panels of the sidewall door should be tightly closed.
6. The sweep arm of built-in sweep systems is positioned over the intermediate sumps.
8. The working areas around the bin are clean and free of clutter.
9. All guards and shields are in place.

NOTE: Refer to the installation and operations manual of the control panel for information pertaining to the actual drying operation of the Ezee Dry.

PUMP UNIT ASSEMBLY (selected parts)



Ezee Dry Sidewall Sheet Part Numbers

Gage	Length	Color Code	Description	18'	21'	24'	27'	30'
19	114 1/8"	green/gray	top half sheet	015147	015148	015149	015150	015151
19	114 1/8"	green/gray	tension ring sheet	015350	015351	015352	015353	015354
19	114 1/8"	green/gray	stiffener punched sheet	015323	015324	015376	015377	015378
17	114 1/8"	red	stiffener punched sheet	015326	015327	015328	015329	015330
15	114 1/8"	blue/yellow	stiffener punched sheet	015333	015334	015335	015336	015337
14	114 1/8"	yellow	stiffener punched sheet	-	015342	015343	015344	015345
19	57 7/8"	green/gray	fan entrance/door sheet	015160	015161	015162	015163	015164
17	57 7/8"	red	fan entrance/door sheet	015477	015154	015155	015156	015157
15	57 7/8"	blue/yellow	fan entrance/door sheet	015479	015480	015481	015482	015483
14	57 7/8"	yellow	fan entrance/door sheet	-	-	015484	015485	015486
13	57 7/8"	yellow/black	fan entrance/door sheet	-	-	-	015488	015489
17	67 1/4"	red	short door sheet	010118	010217	010317	010427	010518
15	67 1/4"	blue/yellow	short door sheet	011311	011314	011317	011320	011323
14	67 1/4"	yellow	short door sheet	-	-	010315	010416	010516
13	67 1/4"	yellow/black	short door sheet	-	-	-	011230	011233
17	123 1/2"	red	long door sheet	015459	015460	015461	015462	015463
15	123 1/2"	blue/yellow	long door sheet	015465	015466	015467	015468	015469
14	123 1/2"	yellow	long door sheet	-	-	015471	015472	015473
13	123 1/2"	yellow/black	long door sheet	-	-	-	015475	015476
17	114 1/8"	red	flashing sheet	015360	015361	015362	-	-
15	114 1/8"	blue/yellow	flashing sheet	015364	015365	015366	015367	015368
14	114 1/8"	yellow	flashing sheet	-	-	015370	015371	015372
13	114 1/8"	yellow/black	flashing sheet	-	-	015798	015435	015436
12	115 5/8"	black	flashing sheet	-	-	-	015457	015438

Dryer Component Parts List

Part Number	Description
015001	18' Tension Ring Segment
015002	21' Tension Ring Segment
015003	24' Tension Ring Segment
015004	27' Tension Ring Segment
015005	30' Tension Ring Segment
015140	Tension Ring Splice Plate
015397	Tension Ring Splice Plate
015008	18' Center Collar
015009	21' Center Collar
015010	24' Center Collar
015011	27' Center Collar
015012	30' Center Collar
015020	18' Plenum Rafter LH
015782	18' Plenum Rafter RH
015022	21' Plenum Rafter LH
015784	21' Plenum Rafter RH
015024	24' Plenum Rafter LH
015786	24' Plenum Rafter RH
015026	27' Plenum Rafter LH
015788	27' Plenum Rafter RH
015028	30' Plenum Rafter LH
015790	30' Plenum Rafter RH
015063	18' Plenum Roof Sheet
015064	21' Plenum Roof Sheet
015065	24' Plenum Roof Sheet
015066	27' Plenum Roof Sheet
015067	30' Plenum Roof Sheet
015231	30' Plenum Roof Sheet - Batch
015036	18' Plenum Sheet Support Angle
015037	21' Plenum Sheet Support Angle
015038	24' Plenum Sheet Support Angle
015039	27' Plenum Sheet Support Angle
015040	30' Plenum Sheet Support Angle
015035	Plenum Rafter Brace - Lower
015230	Plenum Rafter Brace - Upper
015123	Plenum Roof Cone

Part Number	Description
015284	Flashing
015144	Flashing Sealer Plate
015145	Dump Hopper Assembly
015127	30' Batch Upper Chute Neck
015034	Dump Hopper Chute
015087	Grain Band Support Post
015095	Grain Band 10" x 67"
015096	Grain Band 7" x 67"
015093	Grain Band 10" x 76"
015094	Grain Band 7" x 76"
015090	Grain Band 20" x 90"
015091	Grain Band 10" x 90"
015092	Grain Band 7" x 90"
015125	Grain Band 10" x 117"
015126	Grain Band 7" x 117"
015097	Perforated Grain Band 18" x 90"
015301	Perforated Band Clip
015014	Center Plenum Cone Bracket
015015	Brace Channel Bracket
015016	Center Collar Brace Channel
015132	Cable Adjustmenet Angle
015523	Center Pulley Bracket
015133	18' Center Chain Disk
015134	21' Center Chain Disk
015135	24' Center Chain Disk
015136	27' Center Chain Disk
015137	30' Center Chain Disk
015138	Outer Pulley Main Angle
015139	Outer Pulley Small Angle
088003	2 1/2" O.D. Cable Pulley
015141	Winch Bracket
015142	DL1400 Winch
015265	Hydraulic Pump Unit
015300	Cylinder/Accumulator Assembly
912105	#4 Twin Loop Chain
912200	1/4" Aircraft Cable

Roof Parts

Part No.	Description
011400	40" Roof cap
011401	Roof cap flashing
011402	36" Peak ring
011404	18' Standard roof sheet
011405	21' Standard roof sheet
011406	24' Standard roof sheet
011407	27' Standard roof sheet
011408	30' Standard roof sheet
011414	18' Roof sheet w/ manhole
011415	21' Roof sheet w/ manhole
011416	24' Roof sheet w/ manhole
011417	27' Roof sheet w/ manhole
011418	30' Roof sheet w/ manhole
011423	Manhole cover 18', 27', 30'
011424	Manhole cover 21', 24'
011425	Safety ring pipe
011466	Roof cap slide rod
011484	Roof step #2
011486	Roof step #4
011488	Roof step #6
011490	Roof step #8
011492	Roof step #10
011494	Roof step #12
011496	Roof step #14
011498	Roof step #16
011464	Eave clip
011465	Roof cap hardware pkg
011467	Manhole hardware pkg
011468	Safety ring connector
011470	1" Roof pipe clamp
011471	Cap cllosure

Fan Platform Parts

Part No.	Description
015254	Platform sidewall bracket
015077	Main support channel
015072	Support brace - left hand
015073	Support brace - right hand
015082	Cross strap
015078	Support channel
015080	End support channel
015757	Corner post
015085	80" Toeboard
015086	56" Toeboard
015756	84" Toeboard
015083	80" Railing
015084	56" Railing
015755	84" Railing
015249	Floor spacer channel
020079	Floor pieces

Door / Step Across Platform Parts

Part No.	Description
015256	Support angle LH 45 1/2"
015257	Support angle RH 45 1/2"
015258	Toeboard 37"
015259	Railing 37"
020037	Floor piece 37"
10033147	Corner post
015102	Main support brace
015103	Railing support brace
015098	Support angle LH 38 1/2"
015099	Support angle RH 38 1/2"
015100	Toeboard 26"
015101	Railing 26"
020026	Floor piece 26"

Stiffeners

Part No.	Description
015107	Top 2 ring stiffener
015106	Intermed/Btm 2 ring stiffener
015251	Bottom 1 ring stiffener

Door Parts

Part No.	Description
011649	1 Ring door frame
011651	1 Ring door outer cover
011653	2 Ring door frame
011655	2 Ring door outer cover
011691	Door hardware package
010087	Outer door clip
011679	Striker plate
018161	T-handle
018165	T-handle cam
018937	#8 x 3/8" Screw
018947	#8 Lockwasher
018974	#8 Hex nut
90000013	1/4" x 1/2" Hex head cap screw
90005000	1/4" Flanged nut

Base Parts

Part No.	Description
012519	18' Base angle
012520	21' Base angle
012521	24' Base angle
012522	27' Base angle - single punch
010404	27' Base angle - double punch
012523	30' Base angle - single punch
010504	30' Base angle - double punch
010049	Anchor clip keeper
010080	Base angle connector
010082	Base angle clip
018902	1/2" x 10" Anchor bolt
018908	1/2" Flat washer
018912	1/2" Hex nut

Vac-U-Vent Parts

Part No.	Description
011446	18' Vac-U-Vent upper sheet
011455	18' Vac-U-Vent lower sheet
011447	21' Vac-U-Vent upper sheet
011456	21' Vac-U-Vent lower sheet
011448	24' Vac-U-Vent upper sheet
011457	24' Vac-U-Vent lower sheet
011449	27' Vac-U-Vent upper sheet
011458	27' Vac-U-Vent lower sheet
011450	30' Vac-U-Vent upper sheet
011459	30' Vac-U-Vent lower sheet
011565	Vac-U-Vent angle - 18'
011566	Vac-U-Vent angle - 21'-24'
011567	Vac-U-Vent angle - 27'-30'
015261	Control pipe 2 ring
030467	Control pipe 1 ring
015447	Control pipe handle
015304	Coupling with hole
015211	Compression spring
068836	3/8" x 6" eye bolt
018952	5/16" x 3 1/2" hex head bolt

Cont Flow Hydraulic Pump Components

Part No.	Description
018100	Hydraulic pump
018102	2" x 30" Cylinder
018103	Solenoid valve
018104	3/8" Check valve
018105	Pressure switch
018106	Transducer
068003	3" O.D. Pulley x 5/8" bore
018112	6" O.D. Pulley x 1" bore
068011	Belt 5L-490
018117	Gauge
018118	1/4" Snifter valve
018959	Pop off valve

Hardware

Part No.	Description
018008	50' Roll of sealer tape
018020	Large "S" hook
90031014	1/4" Cable clamp
068830	1/4" x 3/4" Hex head cap screw
90000011	1/4" x 1" Hex head cap screw
90005005	1/4" Hex nut
90005000	1/4" Flanged nut
018905	5/16" x 1" Bin bolt
018904	5/16" x 1 1/4" Bin bolt
018927	5/16" x 2 3/4" Hex head cap screw
038811	5/16" Metal back neoprene washer
018913	5/16" Hex nut
028002	5/16" Flanged nut
90000031	3/8" x 1" Hex head cap screw
90010021	3/8" Lock washer
90010020	3/8" Flat washer
90005021	3/8" Hex nut
018917	1/2" x 1" Hex head cap screw
068802	1/2" x 1 1/2" Hex head cap screw
068803	1/2" x 2" Hex head cap screw
90010041	1/2" Lock Washer
018908	1/2" Flat Washer
018912	1/2" Hex nut
018918	#12 x 3/4" Self drilling screw
90031012	3/8" x 1 1/4" Eye bolt
018975	1/4" U-bolt

Significant changes from the last printing are:

1. Page 3: The Table of Contents was revised.
2. Page 17: The typical aeration fan dimensions were changed.
3. Page 38: The Manway instructions were revised to include 2 manways.
4. Pages 50 - 53: The ladders instructions were revised.

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